Countering Disinformation through Education: The Curriculum Readiness of Pakistani Universities

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Countering Disinformation through Education: The Curriculum Readiness of Pakistani Universities

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December 2024

About the Coalition Against Disinformation (CAD)

CAD was formed in March 2023 to bring together digital media, academia and civil society stakeholders to push back against disinformation through media literacy initiatives. The coalition works to raise awareness, promote partnerships, and undertake collaborative actions to counter disinformation by producing research, organising training sessions and conducting advocacy. The coalition members include representatives of the schools, departments and centres that offer journalism, media and mass communication degrees at the following public and private-sector universities:

- BUITEMS
- Centre for Excellence in Journalism (CEJ) at IBA
- Fatima Jinnah Women University
- Karakoram International University
- Iqra University
- NUST
- Rawalpindi Women University
- International Islamic University, Islamabad
- Riphah International University
- SZABIST Islamabad
- University of Karachi
- University of Peshawar
- University of the Punjab

In addition, the Digital Media Alliance of Pakistan and the Women Journalists Association are members of the coalition. Freedom Network serves as the coalition's secretariat.

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List of Acronyms

AI	Artificial Intelligence
CAD	Coalition Against Disinformation
CS	Computer Science(s)
CSO	Civil Society Organisation
DAI	Degree Awarding Institution
HEC	Higher Education Commission
HEI	Higher Education Institution
IT	Information Technology
MIL	Media & Information Literacy
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDP	United Nations Development Programme

Executive
Summary

Executive Summary

The proliferation of online disinformation and hate speech affects every aspect of Pakistani society and is often deployed to intensify existing divisions and polarisation among segments of the population. State responses to curb disinformation continued to take a heavy-handed approach in the country in 2024, with restrictions on specific social media apps, the installation of Internet surveillance infrastructure to manage online content, and official plans to reportedly amend the anti-cybercrime law to punish users who spread disinformation.

Educational responses for countering disinformation offer an alternative approach to strict regulatory actions that may weaponise online speech against citizens and undermine their freedom of expression and access to information while not adequately protecting the public from the harms of disinformation and hate speech online. These educational responses, based on Media & Information Literacy (MIL) competencies and critical thinking, need institutional support, customisation and scale in order to be effective in practice.

A starting point for testing MIL curriculum or courses for countering disinformation in Pakistan could be through the higher education system – more specifically Higher Education Institutions that have mass communication, media and journalism departments. The faculty at these departments already look critically at the information landscape and have a responsibility towards preparing graduates that are competent in information integrity principles and MIL skills for their future work in the media and communication sectors.

The Coalition Against Disinformation (CAD), with support from IMS and Freedom Network, conducted a mapping study to determine the readiness of the curriculum at mass communication departments of local universities in terms of offering courses and incorporating topics related to MIL, countering disinformation and fact-checking. Additionally, the curriculum was investigated with a focus on Artificial Intelligence (AI) education, as generative AI tools now have the potential of disrupting the news industry as well as playing a role in the spread of disinformation. The study also examined the capacities and needs of the departments' faculty.

Data for the study was collected through a quantitative survey. The population for the research was identified as the 86 Pakistani universities that offer some type of degree programmes in media-related disciplines. Out of these, a total of 39 media departments from 37 separate public and private-sector universities responded to the survey. In addition, 24 Computer Science and Information Technology departments at the same universities also offered data about the

presence of AI or anti-disinformation contents in their science and technology curricula.

The results show that the media curriculum is largely not ready to address contemporary issues of disinformation and AI. Moreover, the media departments lack trained faculty and technology resources to offer pedagogy in these areas. In brief, the findings of the study are:

- Around 87% of the 39 media departments do not offer a dedicated course related to MIL or countering disinformation.

- One in every three media departments do not even include topics about the concepts of disinformation or digital fact-checking to debunk disinformation in their other existing courses.

- Just over half (54%) of the 39 media departments have not yet started to include lessons on AI use in their curriculum.

- Most media departments – around 80% on average – do not have any faculty member with academic skills or industry experience in MIL or AI topics.

- CS & IT departments are better prepared for AI education, with nearly 80% of the 24 departments offering either special courses or integrated course contents on AI and over half of them having multiple faculty members with academic specialisation in AI. However, none of the CS & IT departments are alert to MIL skills separately in their curriculum.

- Nearly all media and CS/IT departments, however, expressed interest in developing and delivering courses on MIL and AI if they are provided support.

- Most media departments need assistance with faculty training, technology infrastructure,

course development and collaboration with civil society and media. CS/IT departments identified similar needs.

Based on the findings, the study offers the following recommendations for the Higher Education Commission (HEC), universities and civil society organisations:

- **Update higher education policies to include MIL and AI focus**: The HEC should update the higher education policies, including the Undergraduate Education Policy and the Graduate Education Policy, to create a direct learning focus on both MIL skills that can help students prepare against online disinformation and AI skills that can equip graduates with expertise relevant to rapidly changing work environments.

- **Revise curriculum to include MIL and AI topics**: The HEC's National Curriculum Revision Committees (NCRCs), especially the relevant committee for Media and Communication Studies, should consider revising their respective discipline's curriculum to include courses on MIL to address and counter online disinformation – the courses should include themes such as critical thinking, source verification, fact-checking, and ethical content creation – as well as the use of emerging AI technology.

- **Introduce courses on MIL and AI**: Universities should take an active interest in offering learning on information integrity, countering disinformation and the use of AI through dedicated courses and degree programmes. The development of a general course, for example, could allow a university department to rely on internal approval processes, such as approval from the Board of Studies, to offer MIL education.

- **Invest in faculty training and technology**: Universities must invest in faculty training to build the technical capacity of instructors on MIL and AI topics. Academic institutions also need to invest in their technology infrastructure, which is required for effective skills-based education on MIL and AI.

- **Facilitate internal inter-departmental collaboration**: Universities should capitalise on the opportunities available to them internally for expertise on MIL themes and AI topics as faculty members of different departments might have the requisite academic background and practical skills but might be teaching in their own disciplinary or departmental silos with little incentives or resources for internal collaboration.

- **Offer training opportunities and expertise**: Civil society organisations, media development groups and multilateral institutions interested in combatting disinformation and protecting information integrity should offer training opportunities for university faculty to develop their skills. These opportunities can be designed as training-of-trainer workshops.

- **Advocate for education policy changes**: Civil society organisations should conduct policy advocacy with the HEC, education departments, relevant ministries and policymakers to ensure that themes of MIL and information integrity are introduced into the higher education curriculum.

- **Foster collaboration and partnerships**: Civil society organisations should facilitate collaboration and partnerships among the academia, media, multilateral and international organisations, civil society and the tech sector to work together on countering disinformation through educational interventions in Pakistan. The collaborative approach can also offer an alternative to the restrictive Internet regulatory regime being considered by policymakers to stem the tide of false and hateful online messages.

The Coalition Against Disinformation hopes that the findings, recommendations and appendices of this study will help educators, higher education institutions, researchers and other stakeholders in countering disinformation through educational interventions.

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Around 87% of the 39 media departments surveyed for this study did not offer a dedicated course related to MIL or countering online disinformation. However, almost all departments expressed interest in developing such courses.

Introduction

Introduction

Disinformation is described as "intentionally false, misleading, or deceptive information created, presented, or disseminated for the purpose of causing public harm or undermining public trust".[1] The negative effects of disinformation, which in its modern social media-fueled avatar started getting noticed around 2016, continue to be felt worldwide, including in Pakistan.[2] Scholars have noted the malicious use of disinformation campaigns for electoral manipulation, undermining policy actions on important issues such as climate change, and creating public health concerns.[3,4,5,6]

The problems posed to the information ecosystem by the spread of online disinformation and hate speech have led stakeholders, including States, tech companies, media and civil society, to respond in a variety of ways, ranging from fact-checking to regulatory measures and algorithmic responses.[7]

Among these efforts, one type of response is aimed at the target audiences of disinformation campaigns in order to build their resilience to false messages and strengthen their contributions to information integrity. This type of response includes educational interventions to improve the Media and Information Literacy (MIL) of citizens and promote critical thinking among them with regards to their online information use.[8]

UNESCO describes MIL as competencies that enable people to critically and effectively engage with communications content and the institutions that facilitate this content as well as the ability to

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1   Fact-checking and countering disinformation: A primer for media start-ups, freelancers and journalism students. Coalition Against Disinformation. https://drive.google.com/file/d/1yQUbAqMRbZU-Q00LBchY2kjyuGLlY9Tp/view?usp=sharing

2   Global Risks Report. Global Risks 2024: Disinformation tops global risks 2024 as environmental threats intensify. World Economic Forum. https://www.weforum.org/press/2024/01/global-risks-report-2024-press-release/

3   Allcott, H., & Gentzkow, M. (2017). Social media and fake news in the 2016 election. Journal of economic perspectives, 31(2), 211-236.

4   Climate disinformation. European Commission. https://climate.ec.europa.eu/eu-action/climate-disinformation_en

5   Al-Uqdah, L., Franklin, F. A., Chiu, C. C., & Boyd, B. N. (2022). Associations between social media engagement and vaccine hesitancy. Journal of Community Health, 47(4), 577-587.

6   Jamil, S., & Appiah-Adjei, G. (2020). Battling with infodemic and disinfodemic: The quandary of journalists to report on COVID-19 pandemic in Pakistan. Media Asia, Taylor & Francis.

7   Bontcheva, K., Posetti, J., Teyssou, D., Meyer, T., Gregory, S., Hanot, C., & Maynard, D. (2020). Balancing act: Countering digital disinformation while respecting freedom of expression. Geneva, Switzerland: United Nations Educational, Scientific and Cultural Organization.

8   Ibid.

use digital technologies to enjoy the full benefits of their fundamental human rights.[9]

Educational interventions that involve MIL competencies are being tested around the world in various ways, with mixed but encouraging results. Nordic and Baltic region countries, such as Finland, Sweden and Estonia, have made MIL lessons part of their school curriculum, with impressive results that have bagged them the top positions in the Media Literacy Index.[10,11,12,13] In Romania, researchers found that an educational intervention based on European Commission's guidelines on countering disinformation produced "a significant increase in perceived social media literacy and a decrease in general conspiracy beliefs" (Gross & Balaban, 2024).[14]

Similarly, van Helvoort and Hermans (2020) reviewed evidence of educational interventions to counter disinformation and found that approaches that help primary school children recognise disinformation appear to be most effective when "children create their own news messages" as part of the learning activities, offering practical advice for designing a course that is being piloted in The Netherlands.[15] Badrinathan (2021) found that misinformation impact could be resilient to short-term media literacy interventions among ideologically motivated individuals, indicating that pedagogical interventions should be contextually aware.[16]

Pakistan is no stranger to disinformation and much has been written about the domestic spread of disinformation and efforts to counter it in the country.[17] But here too, there is local evidence that educational responses to countering disinformation could work.[18] Ali & Qazi (2023) tested two educational interventions to counter misinformation among low-level literacy populations in Lahore.[19] They found that when general education messages were supplemented with personalised feedback and guidance, it improved the ability of recipient individuals to discern fake news by up to 4.5 percent. Their findings suggest that educational interventions can help Pakistani citizens to spot disinformation but the effectiveness of each approach will depend

9   Media and information literate citizens: Think critically, click wisely! Media & Information Literacy Curriculum for Educators & Learners. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000377068

10   Henley, J. (2020). How Finland starts its fight against fake news in primary schools. The Guardian. https://www.theguardian.com/world/2020/jan/28/fact-from-fiction-finlands-new-lessons-in-combating-fake-news

11   Hanna, C. & Olof, S. (2020). Educating for democracy? The role of media and information literacy education for pupils in Swedish compulsory school. Sustainable Digital Communities. https://doi.org/10.1007/978-3-030-43687-2_25

12   Yee, A. (2022). The country inoculating against disinformation. BBC. https://www.bbc.com/future/article/20220128-the-country-inoculating-against-disinformation

13   Media Literacy Index 2021. https://osis.bg/?p=3750&lang=en

14   Gross, E.-C. & Balaban, D. (2024). The Effectiveness of an Educational Intervention on Countering Disinformation Moderated by Intellectual Humility. Media and Communication. 13. 10.17645/mac.9109.

15   van Helvoort, A.A.J. & Hermans, M. (2020). Effectiveness Of Educational Approaches To Elementary School Pupils (11 Or 12 Years Old) To Combat Fake News. 3.

16   Badrinathan, S. (2021). Educative Interventions to Combat Misinformation: Evidence from a Field Experiment in India. American Political Science Review. 115(4):1325-1341. https://doi.org/10.1017/S0003055421000459

17   Rehmat, A. & Naeem, W. (2022). Countering disinformation in Pakistan. IMS. https://www.mediasupport.org/publication/countering-disinformation-in-pakistan-lessons-and-recommendations-for-digital-journalism/

18   Ali, A., & Qazi, I. H. (2023). Countering misinformation on social media through educational interventions: Evidence from a randomized experiment in Pakistan, Journal of Development Economics, Volume 163. https://doi.org/10.1016/j.jdeveco.2023.103108.

19   Ibid.

on how it is customized for the target group.

Some attempts to implement media literacy initiatives are currently under way in Pakistan. These include efforts such as the MIL priority area of UNESCO Pakistan's Communication & Information programme, which has sensitised over 500 stakeholders and students altogether on MIL skills, and the Safe Digital Environment Programme of UNDP Pakistan, which has conducted student capacity-building sessions on critical thinking at dozens of universities and set up the iVerify Pakistan fact-checking unit among other activities. Supplementing these initiatives are CSO-led fact-checking training and learning resources offered to journalists and educators by local CSOs and alliances, such as the Coalition Against Disinformation (CAD).

However, for these educational efforts to have lasting impact for countering disinformation, an institutional approach might be required where the learning can be integrated in the education system at multiple levels through curriculum or dedicated courses. This is also important given the swift advances in generative Artificial Intelligence (AI) technologies, which are having a disruptive effect on many industries, including the information sector, and can both amplify disinformation production and help detect it for mitigation measures.[20,21]

CAD, whose members include representatives from the mass communication departments of over a dozen Pakistani universities, believes that the mainstreaming of MIL and countering disinformation topics in education can begin with the higher education institutions in Pakistan. More specifically, this can be done through the university curriculum of mass communication, media and journalism departments. There is sufficient appetite for this among mass communication faculty based on previous consultations, and it offers value to the media and communication industries as fresh graduates will enter the work force with fact-checking competencies and related MIL skills. MIL higher education can be supplemented with learning on AI skills to ensure that newsrooms and content production in the future positively use the technology in the public interest.

With this aim, CAD with support from Freedom Network and IMS embarked on a mapping exercise to determine the existing situation of mass communication, media and journalism curricula at Pakistani universities in terms of teaching topics on MIL, AI and countering disinformation. This research report provides the results of the mapping and gives recommendations to systematically introduce MIL and AI education in the higher education curriculum to benefit Pakistani educators and students.

For educational efforts to have lasting impact against disinformation, an institutional approach is needed to integrate learning in the education curriculum.

20   Tackling Disinformation series: Generative AI is the ultimate disinformation amplifier. DW Akademie. https://akademie.dw.com/en/generative-ai-is-the-ultimate-disinformation-amplifier/a-68593890

21   Santos, F. C. C. (2023). Artificial Intelligence in Automated Detection of Disinformation: A Thematic Analysis. Journalism and Media, 4(2), 679-687. https://doi.org/10.3390/journalmedia4020043

Methodology

Methodology

Research Design

The main objectives of the study are to identify specific courses related to fact-checking, countering disinformation, and AI skills being offered at Pakistani universities and understand the faculty interest, competencies, and needs for introducing or improving delivery of courses on these topics.

The study used the following research questions:

1. What is the universe of journalism, media and mass communication higher education in Pakistan in terms of the number and distribution of universities that offer degree programmes in these fields of study?

2. What is the estimated strength of student bodies and faculty at the journalism, media and mass communication departments at identified (and respondent) universities?

3. What is the state of readiness of the journalism, media and mass communication departments and faculty in prioritising MIL and AI topics in existing curriculum? If available, what are the examples of efforts done by journalism, media and mass communication departments in offering courses or learning opportunities to enhance MIL and AI skills of students?

4. What are the technology needs of departments to become specialised centres of education on MIL and AI topics?

5. What is the potential to assist them in developing and delivering education on MIL and AI topics, and what is the current state of external (industry) collaboration at the departments in this regard?

The study adopted a quantitative research design employing a survey approach to map the courses relevant to countering disinformation, fact-checking, digital journalism, and AI at local universities offering journalism or media studies degree programmes as well as computer science and IT education.

Sampling & Data Collection

The following criteria were used for this study to identify universities for inclusion in the research sample:

1. Public and private sector universities that are recognised and accredited by the Higher Education Commission (HEC) of Pakistan.

2. Public and private sector universities with media studies, mass communication or journalism departments that offer undergraduate and graduate level degree programmes in media studies, mass communication or journalism.

A preliminary search through the HEC database revealed 86 universities that met the sampling criteria. See Appendix A for the full list of identified universities.

Two separate survey forms were developed. One form was specifically for the department heads or faculty of journalism, media studies or mass communication departments at the identified universities. The other form was designed for department heads or faculty members of the IT, computer science or software engineering departments of the same universities.

The journalism department-focused survey primarily examined the inclusion of courses related to countering disinformation in the journalism curriculum, with a secondary exploration of AI-related topics in the offered courses. Conversely, the survey questionnaire for the computer science departments focused primarily on courses related to AI in the curriculum, with a secondary identification of fact-checking or media literacy topics in the offered courses. Both survey questionnaires are available in Appendix B.

The survey questionnaires were distributed to the relevant department faculty of the selected universities through Google Forms. The data was collected in July and August 2024. Responses from journalism faculty were recorded from 37 of the 86 identified universities, giving a response rate of 43%. The names of the respondent universities are shown in *Figure 1*. Responses from the computer science faculty were recorded from 24 of the 37 respondent universities, meaning a response rate of 65%. The unit of the analysis was the department. It was observed that one major university – the University of the Punjab – has a School of Communication Studies, with multiple departments related to communication and journalism. Three departments from the university responded separately to the survey. Therefore, the total responses for the journalism-focused questionnaire were 39. The collected data was analysed using SPSS. Descriptive statistics were employed to summarise the data and identify patterns and trends. Ethical considerations were observed throughout the study. Informed consent was obtained from representatives of the respondent university departments. The confidentiality of the data was maintained, and the results are reported in a manner that protect the anonymity of the respondents.

Limitations

The following are the limitations of the study.

1. The research team made significant efforts to ensure that survey data was collected from credible sources, such as heads of departments and senior faculty members. However, due to limited time and resources, the veracity of the data could not be checked through triangulation of data sources. Therefore, the analysis assumes the correctness of the responses, which might be subjective assessments of respondents in some cases, and the findings should be taken as an estimate of the actual situation rather than a definitive summary.

2. The sample only considered the IT and Computer Science departments of those universities that primarily offer journalism or communication education. Many other universities that offer computer sciences degree programmes (such as engineering and technology universities) without any degree programme in media were excluded. Therefore the research findings do not represent the full breadth of AI courses offered at local higher education institutions.

List of Respondent Universities

Representatives of journalism or mass communication departments from the following 37 public sector and private universities responded to the research survey.

- Abdul Wali Khan University
- Bahauddin Zakariya University
- Beaconhouse National University
- BUITEMS
- COMSATS University Islamabad
- Emerson University, Multan
- Fatima Jinnah Women University
- Forman Christan College University
- GC University Faisalabad
- GIFT University
- Gomal University
- Government College University Lahore
- IBA Karachi
- Institute of Southern Punjab
- International Institute of Science, Arts & Technology
- International Islamic University
- Iqra University (Islamabad Campus)
- Khushal Khan Khattak University
- Lahore College for Women University

- Lahore Garrison University
- Minhaj University
- NUST
- Rawalpindi Women University
- Riphah International University
- Sardar Bahadur Khan Women's University
- Sindh Madressatul Islam University
- SZABIST (Islamabad Campus)
- The Islamia University of Bahawalpur
- University of Balochistan
- University of Central Punjab (UCP)
- University of Malakand
- University of Okara
- University of Peshawar
- University of Sargodha
- University of Swat
- University of the Punjab
- Women University Swabi

Figure 1 List of universities in the research sample

Findings

Findings

This section provides the findings from the research data.

Journalism and Media Higher Education in Pakistan

The Higher Education Commission of Pakistan lists 266 recognised universities on its website, as of September 2024. Out of these, the research identified 86 universities that offer degree programmes related to mass communication, media or journalism through their constituent departments, schools, colleges, faculties and centres.

The full list of these identified higher education institutions is given in Appendix A with details about their location, department and degrees.

A brief analysis of the 86 identified universities with media-related degree programmes shows that 45% of them are based in Punjab, 21% in Sindh, 14% in Islamabad, 12% in Khyber Pakhtunkhwa, 5% in Balochistan, 2% in Azad Jammu & Kashmir and 1% in Gilgit-Baltistan.

Altogether 51 institutions (nearly 60%) out of the total 86 are public-sector universities.

Around 40% of the 86 universities only offer an undergraduate degree in the media-related fields while around 48% have both undergraduate and graduate or post-graduate degree programmes. The remaining 11% typically offer some associate degree or diploma programme for media professionals in addition to an undergraduate degree while one institution has a master's programme only.

Characteristics of Respondent Media Departments

The names of the 37 universities whose journalism or media departments responded to the survey for this research are listed in *Figure 1*. Out of these 37 universities, around 50% are based in Punjab (See *Figure 2*).

Most of the universities (70%) are public sector educational institutions (*Figure 3*). As previously mentioned, the total number of respondent departments from these universities is 39 because three departments from one university replied separately to the survey questionnaire.

Regarding the size of the media teaching faculty at the respondents departments, the number of total faculty members (including permanent and visiting) at 51% of the departments (20 out of the 39) was between 1 and 10 teachers, with the median number of faculty members being seven.

In terms of permanent faculty, nearly 75% of the 39 departments had between 1 and 10 permanent

Universities by Province

Nearly half of the universities whose journalism departments responded to the survey are located in the Punjab province.

Sindh: 2 (5%)

Balochistan: 3 (8%)

Islamabad:
6 (16%)

Punjab:
18 (49%)

Total universities:
37 (100%)

Khyber
Pakhtunkhwa:
8 (22%)
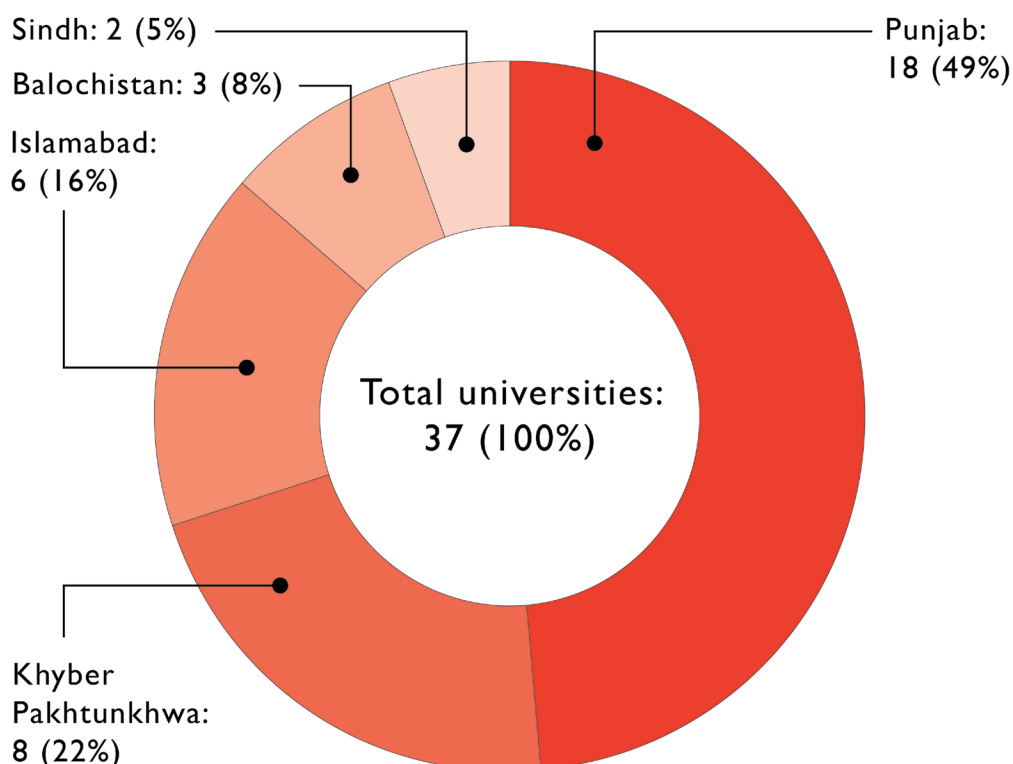
Figure 2 Province-wise share of sample universities

teaching staff, with the median number of permanent faculty members being six (See *Figure 4*).

Seven of the 39 departments (around 18% of the total) said they do not take on any visiting faculty. A majority of the departments (around 60%), however, relied on 1 to 10 instructors from outside the department or university as visiting teachers for general or other courses.

The departments have big student bodies. Just over 50% of the departments (21 out of 39) said they have 200 or more students overall.

The majority of these student bodies are composed of undergraduate programmes – 44% of the 39 departments had 200 or more undergraduate students enrolled while 41% of the departments had fewer than 50 (post)graduate students enrolled.

Altogether the respondent departments identified as many as 500 educators and nearly 9,000 students enrolled in their various media studies and mass communication degree programmes.

Public-Private Share of Universities

Majority of the respondent departments were from public sector universities across the country.

Private: 11 (30%)　　　　Public: 26 (70%)

Total universities:
37 (100%)
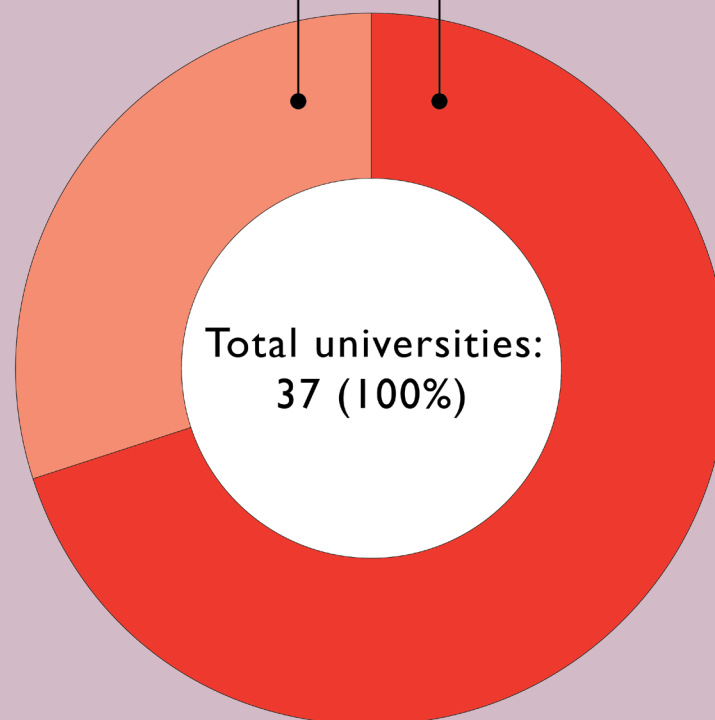
*Figure 3
Share of
public, private
universities in
sample*

> *For the respondent media departments in the sample: majority are part of public sector universities; around half of them belong to universities located in the Punjab province; a majority have between 1 to 10 permanent faculty members and just over half of them have over 200 or more media students.*

Size of faculty at media departments

Most media departments have a small faculty ranging between 1 to 10 total or permanent teaching staff, with the median number of total faculty members and permanent faculty members being 7 and 6 respectively.

Total faculty *Permanent faculty*

Number of faculty members

	Total faculty	Permanent faculty
1 to 10	20	29
11 to 20	12	9
More than 20	7	1

Number of departments
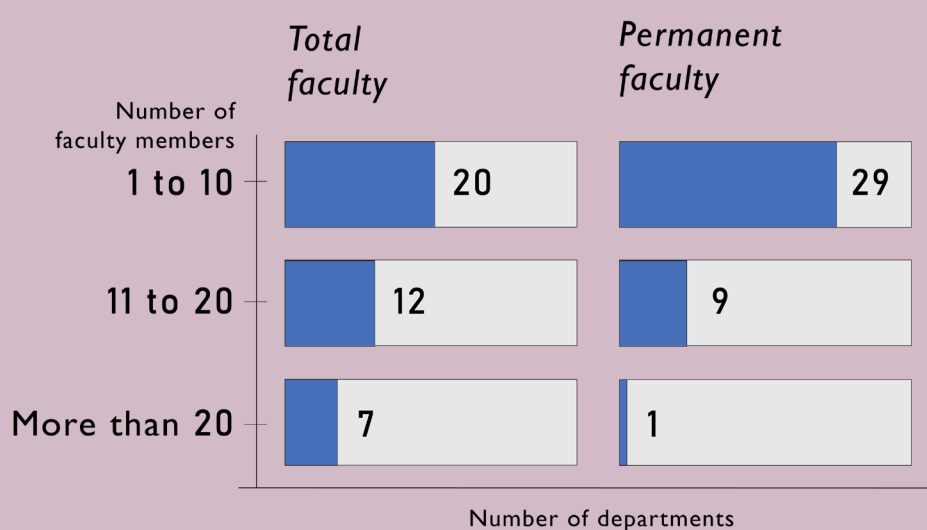
Figure 4 Faculty strength at media departments

Note: Total responses: 39 departments.

Undergraduate programmes understandably make the core of the media departments, with four in 10 departments having around 200 undergraduate students. Overall, respondents identified nearly 500 educators and 9,000 students for their media degree programmes.

Size of media faculty and student bodies

Total faculty

Permanent

Visiting

Total students

Undegraduate

Graduate
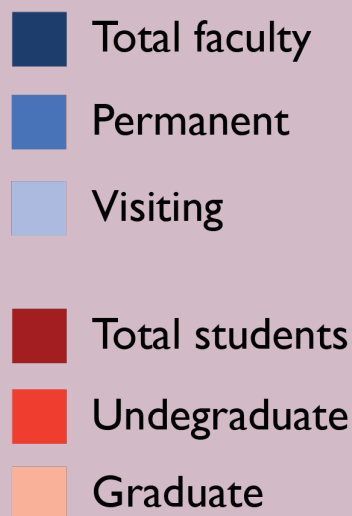
Note: Data was anonymised to respect the confidentiality and privacy agreement with respondents.

Figure 5
Comparison of strength of faculty and students

Number of faculty members
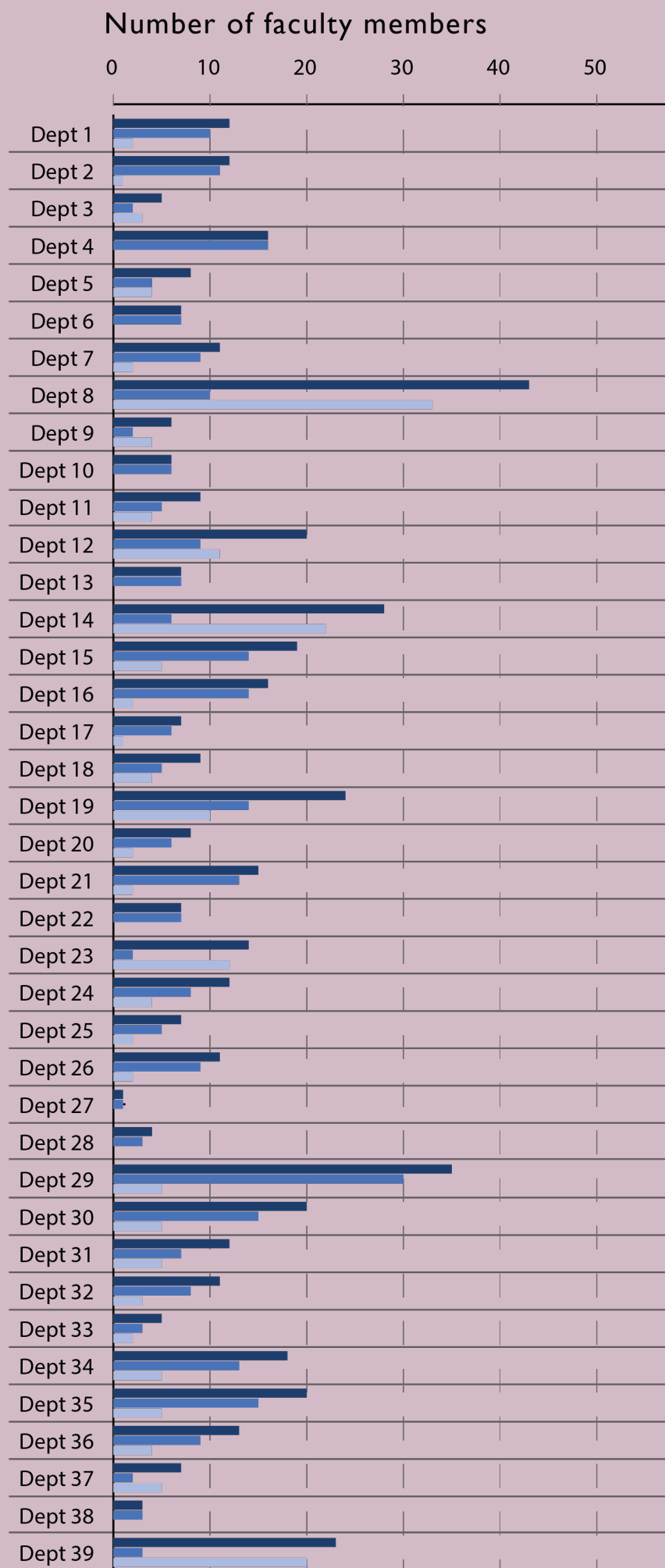
Number of students

| | | | | | | |
|0|100|200|300|400|500|600|

N/A — Dept 1
Dept 2
Dept 3
Dept 4
Dept 5
Dept 6
Dept 7
Dept 8
Dept 9
N/A — Dept 10
Dept 11
Dept 12
Dept 13
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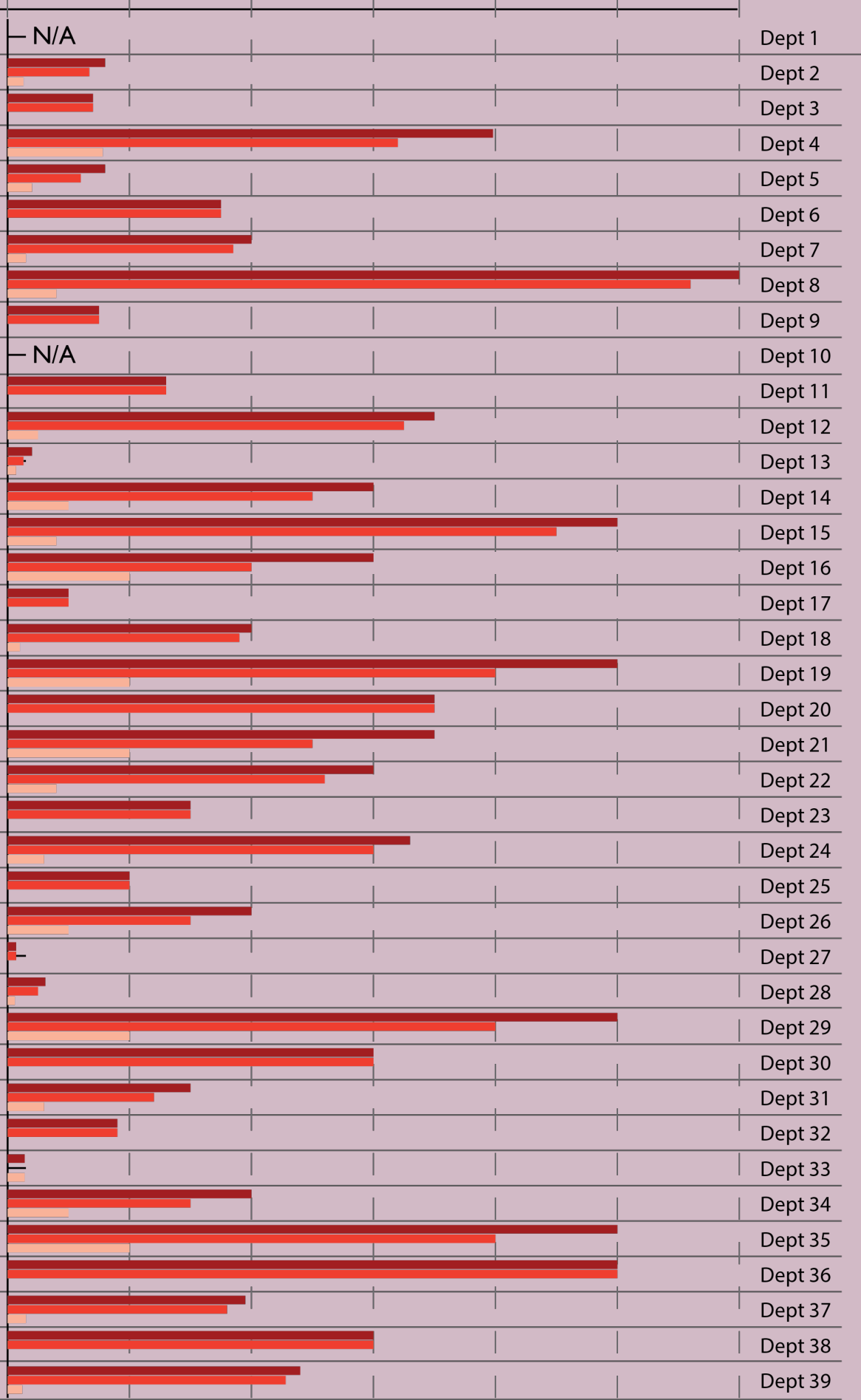
Readiness of Existing Journalism Curriculum: Fact-checking, Countering Disinformation and AI Topics

The media departments were asked for information about the existence of specific courses on disinformation as well as integrated anti-disinformation topics in currently offered media-related courses.

Dedicated Courses on Countering Disinformation

The survey revealed that most media and communication departments at the selected Pakistani universities currently lack dedicated courses on countering online disinformation. Specifically, 87% of the 39 respondent departments do not provide such courses.

Among those departments that do have exclusive courses focused on countering disinformation (five, or 13% of the total), most had only started offering the courses since 2022, only at the undergraduate level and with an average of 50 students enrolled in the courses until now. The courses were mostly offered as "major" courses that count toward completion of the degree programme in the given academic discipline, such as mass communication.

Focus on Countering Disinformation Topics in Other Courses

Out of the 34 departments that did not claim to have dedicated courses on countering disinformation, just over half (19 departments or 56% of the 34) confirmed they include topics related to disinformation and fact-checking within other existing courses. Additionally,

Courses on countering disinformation

Only 13% of the respondent media departments currently offer a dedicated course on countering online disinformation.

Does your department offer a dedicated course on countering online disinformation?
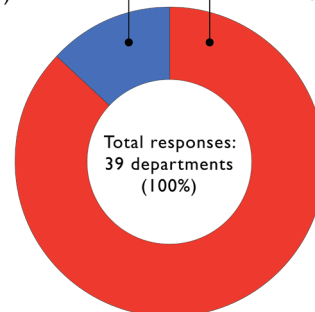
Figure 6 Dedicated courses about disinformation

four university departments that have exclusive courses on countering disinformation said that disinformation topics are also included in their other courses, bringing the total up to 23 departments.

For these 23 departments, most of the courses where learning on disinformation is incorporated are related to either mass media and communication studies (e.g., "Political Communication", "Social Media & Society" or "Media Laws & Ethics" etc.) or journalism (e.g. "Online Journalism" or "Digital News Reporting" etc.). In only a few

Countering disinformation topics

Most respondent media departments include topics about countering disinformation in other courses.

Are disinformation or fact-checking topics included in other courses?
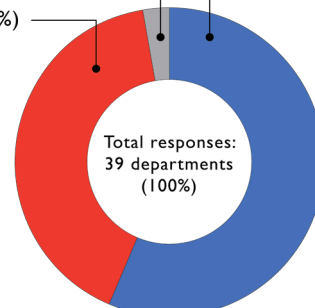
Figure 7 Other media courses with disinformation topics

instances, respondent departments identified courses related to ICT (including AI-related courses) and Media & Information Literacy.

The survey asked the respondent department representatives to describe the topics that were included related to countering disinformation. The responses indicated that media departments are mostly including learning about the definitions and concepts of mis-/dis-information, the role of social media algorithms in amplifying disinformation, the cognitive bias of individuals that can make them susceptible to disinformation, and the impact of disinformation on society. Some departments also claimed to teach their students fact-checking skills, including OSINT techniques, and ways to curb disinformation. Others indicated they were relying on traditional news verification techniques as means to protect against disinformation. The data also showed

that altogether at least one-thirds of the 39 departments neither had an exclusive course on countering disinformation nor had they included related topics in other existing courses, indicating their students were fully lacking formal guidance on the contemporary challenge of disinformation.

AI Education at Media Departments

The media departments had a more favourable response to dedicated courses related to Artificial Intelligence (AI) compared to dedicated courses on countering disinformation. Around 28% of the respondent departments said they have a specific course focused on AI. Examples of these courses include the "Block chain, AI and ML" course offered to undergraduate students by the Department of Digital Media at the Punjab University and the "AI for Digital Media Marketing" course offered by the Riphah

Disinformation topics in course contents

Respondent media departments claimed they had included countering disinformation topics mostly in other mass media courses, with a focus on definitions and concepts.

Types of courses where countering disinformation topics included

Number of departments

General mass media or communication courses	24
Journalism courses	14
ICT courses	5
MIL courses	1
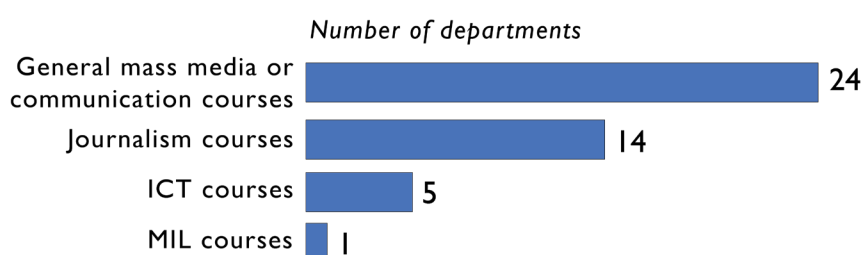
Course contents for countering disinformation topics
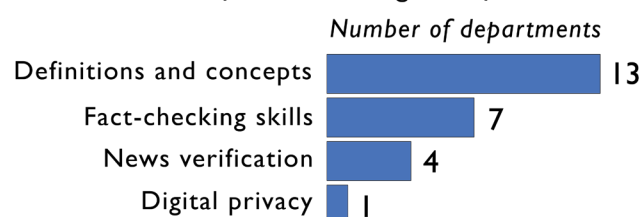
Number of departments

Definitions and concepts	13
Fact-checking skills	7
News verification	4
Digital privacy	1

Figure 8 Type of media courses about disinformation

Total departments: 39. Note: Respondents were allowed to share multiple responses.

International University in Islamabad. Based on the data, a majority of these course offerings started in 2023 around the same time as the generative AI phenomenon caught popular attention around the globe following the introduction of OpenAI's chatbot, ChatGPT. The courses are predominantly being taught at the undergraduate level (over 80%) as core courses (just over 50%) and the average student enrolment is around 50 students. Even then, this is a low share as 72% of the 39 media departments have not considered offering a separate course on AI technologies. Of the 28 media departments where there was no dedicated course on AI, 19 departments (or 68% of the 28) did not even include AI topics in other media-related courses. Overall, 54% of the 39 respondent departments did not include AI learning in any current course. The survey shows that where AI themes are included, they are generally incorporated within courses pertaining to digital journalism, marketing or mass media. The course contents vary from theoretical introduction to AI and large language models to the use of generative AI tools for marketing and content creation.

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Courses on AI for journalism

Less than a third of the respondent media departments currently offer a dedicated course related to Artificial Intelligence (AI) themes.

Does your department offer a dedicated course on AI?

Yes: 11 (28%) — No: 28 (72%)

Total responses: 39 departments (100%)
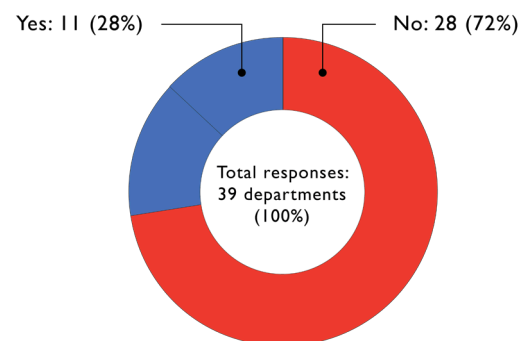
Figure 9 Dedicated AI courses at media departments

Artificial Intelligence topics

Most of the respondent media departments do not include topics related to AI in other media-related courses.

Are AI topics included in other courses?

No response: 5 (13%) — No: 21 (54%)
Yes: 13 (33%)

Total responses: 39 departments (100%)
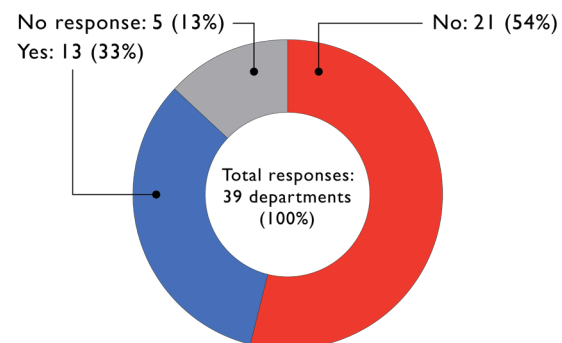
Figure 10 Other media courses with AI topics

AI topics in courses and contents

Respondent media departments claimed they had included AI topics mostly in journalism courses, with a focus on introductory concepts and tools.

Types of courses with AI topics included

Number of departments

Journalism courses	8
Marketing courses	4
Mass media or comm courses	4
ICT courses	2
MIL courses	1
Miscellaneous	3
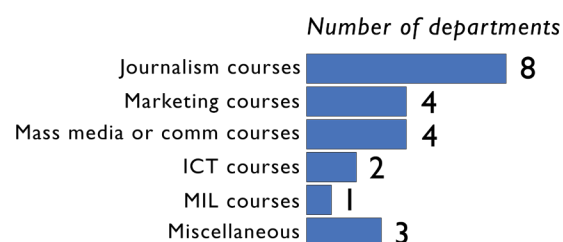
Course contents for AI topics

Number of departments

Concepts & introduction	5
AI for news and content creation	5
Generative AI tools	4
AI use for digital marketing	4
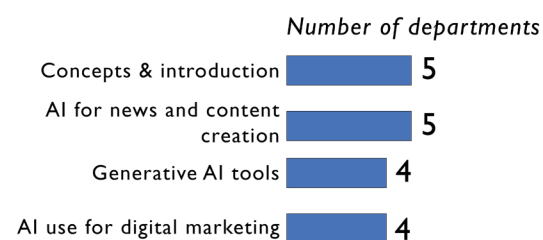
Total departments: 39. Note: Respondents were allowed to share multiple responses.

Figure 11 Types of media courses addressing AI

Interest, Capacity, Needs and Collaboration Potential

Interest: Overall, almost all media departments (38 of the 39) expressed willingness to offer specialised or advanced courses on countering online disinformation, fact-checking and AI topics. However, the technical capacity of the departments to do so is limited.

Capacity: The majority of the respondent media departments (ranging from 77% to 85% of the 39 departments) do not have faculty with academic specialisation or industry experience in countering disinformation, digital fact-checking tools, AI topics, and the use of generative AI tools in journalism. Furthermore, only two out of the 39 respondent departments (5%) were able to sufficiently indicate that they had access to digital tools or software for fact-checking.

Needs: The respondent university departments were asked to identify the assistance they require for offering specialised or advanced courses for addressing disinformation or developing AI skills. Around 95% of the respondents said faculty training was required the most. Around 90% of the 39 departments also indicated the need for assistance with tech infrastructure, collaboration with media and civil society for industry expertise, and course development. There was relatively less, but still significant, interest in interfacing with the tech sector or inviting visiting experts for course design and delivery.

Collaboration: Even though departments expressed the need for collaboration, few have existing partnerships in play. Around 80% of the 39 departments said they had no ongoing or potential collaborations with organisations outside the university for developing courses on countering disinformation. For course development on AI, around 90% of the departments said there was

no collaboration. Around 10% of the departments mentioned the Coalition Against Disinformation and Freedom Network, which are the publishers of this research study. One department at the Punjab University mentioned collaborating with the National Press Trust and the Ministry of Information and Broadcasting. Media departments at two universities mentioned internal inter-departmental or inter-campus co-operation while three other university departments indicated external collaboration without providing specific details about partners.

Readiness of Existing CS & IT Curricula: AI and Countering Disinformation Topics

The survey consulted computer sciences departments across the sample universities (those that have media departments and responded to the survey) to assess their curriculum readiness to address critical topics of AI and countering disinformation. A total of 24 computer sciences or Information Technology (IT) departments from the selected universities responded to the questionnaire.

AI Education at CS & IT Departments

Nearly 67% of the 24 departments already provide specific courses on AI, suggesting a strong recognition of AI's importance in the field of computer science. The earliest of these exclusive courses was started back in 2015 and the majority of the course offerings have continued since 2021 or before. The dedicated AI courses are mostly taught at the undergraduate level as core or elective subjects with, on average, 150 students per department enrolled regularly. At the eight departments with no exclusive AI course, at least three said they include AI topics in other existing courses, such as on Information Security

NEEDS **AND CAPACITY**

*Figure 12
Media faculty
competencies
for MIL and AI*

MEDIA DEPARTMENTS

*Figure 13
Capacity
needs of
media
departments*

Existing capacity of media faculty

Most media departments do not appear to have faculty members with skills to teach courses on countering disinformation as well as AI topics in journalism.

Number of faculty members	Academic specialisation related to fact-checking or countering disinformation	Industry expertise related to fact-checking or countering disinformation	Academic specialisation related to Artificial Intelligence and its use	Industry expertise related to Artificial Intelligence and its use
0	30	31	30	33
1	6	4	5	3
More than 1	3	4	4	3

Number of departments

Note: Total responses: 39 departments.

Capacity needs of media departments

Most media departments are willing to offer specialised courses on AI or countering disinformation, but require help for faculty training, technology infrastructure and course development.

If your department is willing to offer specialised courses on countering disinformation, fact-checking or AI, then what type of assistance does your department need?

Number of departments

Faculty training	37
Collaboration with media and CSOs	35
Tech infrastructure (equipment, labs etc.)	35
Course development	34
Dialogue with tech sector	29
Visiting subject experts	28
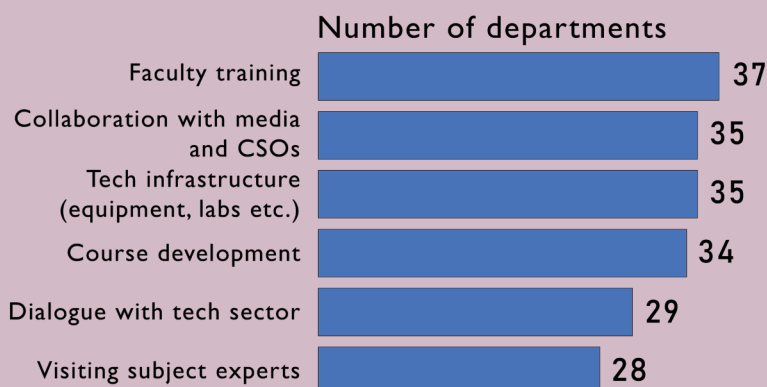
Note: Total responses: 39 departments. Respondents were allowed to pick multiple options.

Existing capacity of CS/IT faculty

Most CS/IT departments have faculty with academic ability in AI topics but lack industry experience for AI use. Skills on countering disinformation topics are missing.

Number of faculty members

	Academic specialisation related to Artificial Intelligence and its use	Industry expertise related to Artificial Intelligence and its use	Academic specialisation related to fact-checking or countering disinformation	Industry expertise related to fact-checking or countering disinformation
0	11	21	21	22
1 to 5	10	1	3	2
More than 5	3	2	0	0

Number of departments

Note: Total responses: 24 departments.

NEEDS AND CAPACITY

Figure 14 CS/IT faculty competencies for MIL and AI

Capacity needs of CS/IT departments

Nearly all CS/IT departments are willing to offer specialised courses on AI or countering disinformation and have identified needs for help with course development, faculty training and technology equipment.

If your department is willing to offer specialised courses on countering disinformation, fact-checking or AI, then what type of assistance does your department need?

Number of departments

Course development	23
Faculty training	23
Tech infrastructure (equipment, labs etc.)	23
Collaboration with media and CSOs	20
Visiting subject experts	19
Dialogue with tech sector	16

Note: Total responses: 24 departments. Respondents were allowed to pick multiple options.

CS / IT DEPARTMENTS

Figure 15 Capacity needs of CS/IT departments

etc., with topics such as machine learning basics. However, the absence of dedicated AI courses or inclusion of AI themes in existing courses at one in every five departments in the sample raises concern about the fitness of their graduates for industry expectations.

Countering Disinformation Education at CS & IT Departments

None of the assessed computer sciences departments had a dedicated course on countering disinformation or fact-checking. Only seven of the 24 departments (around 30%) said they have integrated disinformation-related topics, such as fact-checking and personal data regulation, in existing courses on social media and information or data security.

Interest, Capacity, Needs and Collaboration Potential

Interest: As indicated earlier, most CS & IT departments are offering courses in AI. Additionally, all CS & IT departments expressed their interest in offering specialised or advanced courses on both AI topics and countering disinformation.

Capacity: A majority of the departments also claimed to have several faculty members with academic qualifications related to AI topics. However, as evident from earlier responses, issues related to online disinformation are not top of the departmental agendas, and faculty competencies in this area are also missing. Industry experience among faculty for the uses of AI and fact-checking was similarly lacking.

Needs: The CS/IT department respondents indicated assistance needs similar to the media departments, with almost all departments indicating support for course development,

faculty training and technology infrastructure, such as equipment and labs. There was relatively less, but still majority, interest in collaboration with other sectors and inviting subject experts for course design and delivery.

Collaboration: Around 88% of the 24 departments had never collaborated with any organisation for AI course development. Only three departments indicated existing or past collaboration, including with the Higher Education Commission and the Khyber Pakhtunkhwa IT Board in the case of one university department. But around 80% of the CS/IT departments were open to partnerships with media, civil society and the tech sector for course design and delivery for both AI topics and the area of addressing online disinformation.

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Altogether at least one-thirds of the 39 media departments neither had an exclusive course on countering disinformation nor had they included related topics in other existing courses, indicating that students were fully lacking formal guidance on the contemporary challenge of disinformation.

Discussion

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Discussion

The survey findings provide sufficient information to address the research questions set for this study.

The Universe of Journalism, Media and Mass Communication Higher Education in Pakistan

The first research question for this study was to determine the landscape of higher education in terms of the number and distribution of Pakistani universities that offer degree programmes in the fields of journalism, media and mass communication. The research findings illustrate that one in every three of the 266 recognised degree-awarding higher education institutions provide undergraduate or post-graduate learning in these fields.

This indicates a considerable focus on media-related pedagogy at universities, and consequently a need to ensure that the media curriculum is up to date with the latest technological trends, such as use of generative AI, and able to address the most pressing challenges for the media and information landscape, such as online disinformation.

Every province and region of the country has at least one university that offers degrees in media studies or mass communication. However, just over half of these universities (53%) are concentrated in three cities: Lahore (21), Karachi (13) and Islamabad (12), making them the centres of media-related higher education. These three cities are also coincidentally the three biggest centres of the media and news industries of Pakistan.

Strength of Student Bodies and Faculty at Journalism, Media and Mass Communication Departments

The second research question was related to determining the strength of the students and faculty at the relevant departments of media-related degree-awarding institutions. While the research cannot claim to identify the exact strength of media faculty and enrolled students at all 86 universities that offer mass communication education with complete certainty, the sample departments give an estimate of the scale.

Based on the data provided by the respondent departments, the research showed that there were altogether around 500 faculty members – including overall 320 permanent staff – and around 9,000 students across degree levels at the 39 media departments.

Extrapolating the average number of students to all the 86 identified universities, the total strength of students enrolled in media-related

programmes is estimated to be around 20,000. The actual number might be higher – the most recent statistics published by the Higher Education Commission's data repository show that there were nearly 27,000 students enrolled in journalism-related disciplines (excluding library sciences) across all degree levels in 2021-22.[22]

For faculty, the estimated total number of instructors for the programmes at the 86 identified universities is approximately 1,100.

In relative terms, the strength of students and faculty at the journalism, media and mass communication departments is only a small share (around 1%) of the overall 1.9 million enrolled students and 98,000 faculty at higher education institutions.[23]

This result shows that while educational interventions for countering disinformation and advancing AI skills are important for the media-related departments, they might reach a much wider student and faculty population if they were offered in the form of mandatory general education courses that are taught to all undergraduate students regardless of discipline or degree programmes.

State of Readiness of the Journalism, Media and Mass Communication Departments, Faculty and Curriculum in Prioritising MIL and AI Topics

The media departments were found to be not ready to prioritise MIL and AI topics in their existing curriculum.

As mentioned earlier, 87% of the 39 media departments did not offer a dedicated course related to MIL or countering disinformation. Moreover, at least one-thirds of the 39 departments neither had an exclusive course on countering disinformation nor had they included related topics in other existing courses, indicating their students were fully lacking formal guidance on the contemporary challenge of disinformation. Similarly, 72% had no dedicated course on AI use in journalism and around half did not include any AI topics in other existing courses.

The finding shows that higher educational institutions mostly do not have formal, targeted courses on MIL and addressing disinformation. This discrepancy might represent a missed opportunity in curriculum development to meet one of the most pressing needs of communication and journalism pedagogy. The gap underlines the essential need for specialised education in fact-checking and MIL, especially since graduates from these departments will enter the media and communication industries where they might be expected to possess skills on debunking false online messages. Similarly, the identification of no formal discussion on AI either through dedicated courses or through other course contents at half of the sample departments shows that they are under-prepared for the ongoing AI integration in the media and communication sectors. As a result, most future media and communication graduates might not be prepared to handle AI tools in their fields.

One encouraging sign, however, is that some departments have started showing a level of awareness and including MIL and AI topics in their communication and journalism courses. This indicates acknowledgement among the faculty of the importance of countering disinformation and an promising sign that students at most

22   HEC Higher Education Statistics: https://www.hec.gov.pk/english/universities/hes/Pages/HEDR-Statistics.aspx

23   2021-22 statistics for overall enrolment and faculty.

universities are at least getting some learning on these topics.

Another significant opportunity is presented by the university departments that have started to offer dedicated courses on MIL and AI topics. These departments can be engaged as mentors for training faculty at other universities, and their course outlines can serve as models or guides for other media departments across the country. Examples of efforts done by departments in this regard are shown in *Figure 16* and a model course outline and some publicly available course outlines from national and international institutions are shared in Appendices C and D respectively to serve as best practices.

Course development also leads to the question of having faculty capacity to teach the courses. Only a quarter of the media departments indicated having one or more faculty members with MIL or AI skills. This reveals a major challenge in terms of readiness to offer such courses.

Technology Needs of the Departments

One research question aimed to establish the technological resources available at the respondent departments and their needs regarding tech support. The technology needs were top of the mind for several respondent departments who also shared qualitative comments about it through the survey.

Overall, 90% of the surveyed media departments said they need help in setting up technology infrastructure to be able to teach MIL and AI topics. All except two departments had no access to digital tools that could help them teach digital verification or fact-checking to counter disinformation. The needs and requirements for

Figure 16 Examples of MIL and AI courses by media departments

Course title
Recognizing and Managing Disinformation
Type of course: General
Riphah International University
Riphah Institute of Media Sciences

Course title
Digital Media Literacy & Cybercrime
Type of course: Major
University of the Punjab
School of Communication Studies
Department of Digital Media

Course title
AI & Media Literacy
Type of course: Elective
Iqra University
Department of Media Studies

Course title
AI and Media
Type of course: Elective
Fatima Jinnah Women University
Department of Communication and Media Studies

Course title
Block Chain, AI & Machine Learning
Type of course: Elective
University of the Punjab
School of Communication Studies
Department of Digital Media

accessing technology might be more acute for the public-sector universities in the sample.

This reveals a gap in the availability of crucial

resources, which hinders the ability of the institutions to teach the subjects under discussion. On the other hand, it also identifies an opportunity. Respondents suggested that they would benefit from access to online tools, digital equipment, studios and teaching labs for courses related to AI and fact-checking skills. Investment in technology at the media departments could directly boost the teaching and learning experience.

Assistance and Collaboration to Serve Department Needs

Almost all journalism, media and mass communication departments that responded to the survey were open to offering dedicated courses on MIL and AI topics. A majority of the departments also expressed interest in receiving support in the six areas identified by the survey (in order of interest): Faculty training; Collaboration with media and civil society; Technology infrastructure; Course development; Interfacing with the tech sector; and Access to visiting subject experts.

The highest priority need for the respondent departments was to develop the skills of their faculty members through accessing training and capacity building opportunities. Teacher training is, therefore, a clear and obvious area where other stakeholders, such as civil society and media development groups, can help the academia. It can also tie in with support for course development as the teacher training can rely on a model course outline that may then be taught by the trained faculty at their respective institutions.

The departments were also open to collaboration with media, civil society and the tech sector for education on MIL and AI topics. However, a majority of the departments had no ongoing collaborations or partnerships with these sectors. With this identified gap and the expression of

need, there is a clear opportunity to facilitate collaboration and partnerships among the universities, media, civil society and the tech sector to update the mass communication and journalism curriculum with a view towards inclusion of fact-checking, MIL and AI learning.

Overall, the findings show an urgent need for higher education institutions to step in and proactively address the lack of readiness, considering the high level of online disinformation in our domestic media environment and the influence of AI on the media sector.

The Situation at CS & IT Departments

The CS and IT departments were unsurprisingly ready for AI education with 80% of the respondent departments having some form of AI courses or course contents available to their students. While the computer sciences curriculum focused on the technical aspects of the field, it was not alert to concerns about the digital information landscape, such as online disinformation, with 70% of the CS and IT departments not reflecting MIL topics at all in any course. This is particularly alarming in a global setting when disinformation is widely recognised as a threat to democracy, public health, and societal stability. The absence of systematic instruction on these themes inside IT departments could limit the development of strong digital literacy skills, which are vital for addressing the issue of misinformation online.

Regarding AI education, some Pakistani universities have also rolled out specialised undergraduate and graduate programmes related to AI. These universities include the ITU, COMSATS, NUST and others. A non-exhaustive list of these initiatives is provided in Appendix E. Although these AI programmes are not the main focus of the current study, it highlights an area

of cooperation where media departments might benefit from existing faculty capacity, skills and resources at the CS and IT departments at their universities to design and offer inter-disciplinary courses.

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The highest priority need for the respondent departments is to develop the skills of their faculty members through accessing training and capacity building opportunities. Teacher training is, therefore, a clear and obvious area where other stakeholders, such as civil society and media development groups, can help the academia in countering disinformation through educational interventions. It can also tie in with support for course development as the teacher training can rely on a model course outline that may then be taught by the trained faculty at their respective institutions.

Conclusion
& Recommendations

Conclusion & Recommendations

Based on the research findings and discussion, it is clear that higher education institutions in general, and media departments more specifically, need to focus on updating their curriculum to include MIL and AI topics.

Recommendations for HEC and Policymakers

Update the higher education policies to include MIL and AI focus:

The HEC should update the higher education policies, including the Undergraduate Education Policy and the Graduate Education Policy, to create a direct learning focus on both MIL skills that can help students prepare against online disinformation and AI skills that can equip graduates to stay relevant in rapidly changing work environments.

There is precedent for such measures. The existing Graduate Education Policy mentions Sustainable Development Goals (SDGs) in connection with research and the existing Undergraduate Education Policy includes among its objectives the proficient use of ICT. The undergraduate policy offers space for policy-level changes in the general education requirements to reflect MIL and AI skills. The HEC prescribes the use of its designed model course outlines for eight of the 11 courses in the general education cluster. Introduction of MIL and countering disinformation topics there can help universities take on the development and delivery of general courses on MIL and AI or integrate these topics in existing general courses.

Revise curriculum to include MIL and AI topics:

National Curriculum Revision Committees (NCRCs), especially the relevant committee for Media and Communication Studies, should consider revising their discipline's curriculum to include courses on MIL – the courses could include themes such as understanding bias, source verification, fact-checking, and ethical content creation – to address and counter online disinformation.

The committees should also consider the inclusion of basic or advanced courses on AI skills relevant to their disciplines. The Media and Communication Studies curriculum was previously revised in 2017-18, which means it is in need for an update to address the developments of the past six years. The Media and Communication Studies NCRC should therefore immediately take up the matter of introducing MIL and AI skills to the mass communication curriculum.

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Recommendations for Higher Education Institutions

Introduce courses on MIL and AI:

Universities should take an active interest in offering learning on information integrity, countering disinformation and the use of AI through dedicated courses and degree programmes. As the research indicates, some mass communication departments and most computer sciences departments are already offering courses on MIL issues and AI topics respectively. Relevant departments can use the sample courses shared in this report (See *Appendices C and D*) to develop and offer their own general, major or interdisciplinary courses on these themes. Some of these options will be more convenient than others. The development of a general course, for example, could allow a university department to rely on internal approval processes, such as approval from the Board of Studies, rather than having to involve the HEC. Mass communication departments can use this approach to fast-track the delivery of an MIL course aimed at countering disinformation and improving information integrity. The use of AI tools in higher education might vary among instructors, courses, and departments based on their preferences and disciplines. But universities should also take a systemic approach to provide guidance to their constituent colleges and faculty about the use of AI in pedagogy from both a teaching aid paradigm and a learning perspective. This will ensure that their graduates are equipped for the modern challenges of a digital world.

Invest in faculty training and technology:

Universities must invest in faculty training so that the faculty members can appropriately teach the MIL and AI topics. This is especially important for the media and mass communication departments, for which these are new technical areas of study that require faculty to first develop their own understanding before imparting education. Academic institutions also need to invest in their technology infrastructure as MIL and AI skills-based education requires the use of computer labs, software and Internet connectivity. For courses on these topics to be effectively implemented and for the students to have practical skills in addition to theoretical knowledge, experiential learning requires the availability of tools and settings. Therefore, universities need to budget for developing state-of-the-art laboratories and technological infrastructure. Creating partnerships with IT firms and other educational institutions could also provide faculty members with the required resources and expertise.

Facilitate internal inter-departmental collaboration:

Universities should capitalise on the opportunities available to them internally for expertise on MIL themes and AI topics as faculty members of different departments might have the requisite academic background and practical skills but might be teaching in their disciplinary or departmental silos with little space and resources for internal collaboration. In such circumstance, an inter-departmental or inter-disciplinary approach is left to the personal initiative of a few individuals. But department and university leadership can foster internal collaboration by taking a bird's eye view of the education environment at their institution and identifying connections that can help faculty learn from each other and offer the best

education to their students on contemporary digital issues.

Recommendations for Civil Society Organisations and Media Development Groups

Offer training opportunities and expertise:

Civil society organisations, media development groups and multilateral institutions interested in combatting disinformation and protecting information integrity should offer training opportunities for university faculty to develop their skills on MIL, countering disinformation, fact-checking and the use of AI. These opportunities can be designed as training-of-trainer workshops to create cohorts of faculty master trainers who can then offer further training to instructors at their institutions and other universities in their region. Initial focus can be on departments of media, mass communication and social sciences as they most closely look at the information ecosystem and the risks posed by disinformation. Civil society organisations should also offer expertise on countering disinformation through conducting and supporting contextualised research and learning resources to help the local academia understand the challenges of the information environment.

Advocate for education policy changes:

Civil society organisations should conduct policy advocacy with the HEC, education departments, relevant ministries and policymakers to ensure that themes of MIL and information integrity are introduced into the higher education curriculum. They can offer research evidence for the policy changes and support pilot testing of educational initiatives to measure the impact of MIL efforts to counter disinformation. Civil society groups should also hold consultations and discussions with the curriculum department at HEC as well as the NCRC of Media and Communication Studies to convince them about revisions to the existing curriculum to include MIL and AI topics.

Foster collaboration and partnerships:

Civil society organisations should facilitate collaboration and partnerships among the academia, media, multilateral and international organisations, civil society and the tech sector to work together on countering disinformation through educational interventions in Pakistan. Universities can benefit from this approach because it can unlock expertise and resources for them to teach courses that prepare their students against the onslaught of online disinformation and the disruptions being caused by generative AI technologies. It will help the media industry in terms of availability of trained human resources and an evidence base for providing reliable and fact-checked information to the public. It will similarly help the tech sector in accessing R&D and human resources while offering information on industry trends to help update teaching practices. Finally, it will benefit the civil society in achieving the objective of combatting online disinformation that poses threats to digital citizenship and democracy. The collaborative approach can also offer an alternative to the heavy-handed regulatory restrictions on the Internet being considered by policymakers to stem the tide of false and hateful online messages.

Appendices

Appendix A: List of Universities

No.	Region	Location	University	Department	Degree Programmes	Status	Link
1	Azad Jammu & Kashmir	Mirpur	Mirpur University of Science and Technology (MUST)	Department of Mass Communication	BS	Public	https://must.edu.pk/department-of-mass-communication/
2	Azad Jammu & Kashmir	Muzaffarabad	The University of Azad Jammu & Kashmir	Department of Journalism and Mass Communication	BS	Public	https://ajku.edu.pk/mass-communication/
3	Balochistan	Quetta	Al-Hamd Islamic University	Department of Social Sciences	BS	Private	http://www.qta.aiu.edu.pk/department-of-social-sciences.php
4	Balochistan	Quetta	BUITEMS (Balochistan University of Information Technology, Engineering and Management Sciences)	Department of Mass Communication	BS	Public	https://www.buitms.edu.pk/Mass-Communication
5	Balochistan	Quetta	Sardar Bahadur Khan Women's University	Department of Media and Journalism	BS	Public	https://www.sbkwu.edu.pk/testsbk/Media-Journalism.php
6	Balochistan	Quetta	University of Balochistan	Department of Media Studies	BS, MA, M Phil	Public	http://www.uob.edu.pk/departments/media%20Journalism/index.html
7	Federal Capital	Islamabad	Allama Iqbal Open University (AIOU)	Department of Mass Communication	BA, BS, M Phil, PGD, PhD	Public	https://www.aiou.edu.pk/department-mass-communication
8	Federal Capital	Islamabad	Bahria University	Department of Media Studies	BS, MS, PhD	Public	https://www.bahria.edu.pk/buic/media/
9	Federal Capital	Islamabad	COMSATS University Islamabad	Department of Humanities	BS	Public	http://ww2.comsats.edu.pk/humanities/
10	Federal Capital	Islamabad	Federal Urdu University of Arts, Science & Technology	Department of Mass Communication	BS, MS	Public	https://fuuast.edu.pk/faculty-of-art/department-of-mass-communication/

No.	Region	Location	University	Department	Degree Programmes	Status	Link
11	Federal Capital	Islamabad	Foundation University Islamabad	Department of Arts and Media	BS, MS	Private	https://fusst.fui.edu.pk/index.php/overviewartsandmedia
12	Federal Capital	Islamabad	International Islamic University Islamabad (IIUI)	Department of Media and Communication Studies	BS, MSc, PhD	Public	https://www.iiu.edu.pk/faculties/social-sciences/departments-ss/centre-for-media-communications-studies/
13	Federal Capital	Islamabad	Muslim Youth (MY) University	Faculty of Social Sciences & Humanities	Associate, BS	Private	https://myu.edu.pk/program/Social-Sciences-and-Humanities/BS-Media-and-Performing-Arts-Programme-4-Years-/84
14	Federal Capital	Islamabad	NUML (National University of Modern Languages)	Department of Media and Communication Studies	BS, M Phil, PhD	Public	https://www.numl.edu.pk/departments/175
15	Federal Capital	Islamabad	NUST (National University of Sciences & Technology)	Department of Mass Communication	BS, MS	Public	https://s3h.nust.edu.pk/departments/department-of-mass-communication/
16	Federal Capital	Islamabad	Riphah International University	Riphah Institute of Media Sciences	BS, MS, PGD, PhD, Diploma	Private	https://riphah.edu.pk/riphah-institute-of-media-sciences/
17	Federal Capital	Islamabad	SZABIST Islamabad	Department of Media Sciences	BS, MS	Private	https://szabist-isb.edu.pk/media-sciences/
18	Federal Capital	Islamabad	Virtual University of Pakistan	Department of Mass Communication	Associate, BS, Diploma	Public	https://www.vu.edu.pk/AcademicDepartment/Default?Department=Department%20of%20Mass%20Communication
19	Gilgit Baltistan	Gilgit	Karakoram International University	Department of Media and Communication	BS	Public	https://kiu.edu.pk/department/department-of-media-and-communication
20	Khyber Pakhtunkhwa	Haripur	PAF-IAST (Pak-Austria Fachhochschule: Institute of Applied Sciences and Technology)	School of Design Art and Architecture	BS, MS	Public	https://paf-iast.edu.pk/sdaat/
21	Khyber Pakhtunkhwa	Karak	Khushal Khan Khattak University Karak	Department of Communication and Media Sciences	BS	Public	https://kkkuk.edu.pk/communication-and-media-sciences/

No.	Region	Location	University	Department	Degree Programmes	Status	Link
22	Khyber Pakhtunkhwa	Kohat	Kohat University of Science and Technology (KUST)	Department of Journalism & Mass Communication	BS	Public	https://www.kust.edu.pk/kust/index.php/academics/faculties/faculty-of-social-sciences/department-of-journalism-mass-communication
23	Khyber Pakhtunkhwa	Lower Dir	University of Malakand	Department of Journalism & Mass Communication	BS	Public	https://www.uom.edu.pk/departments/jmc
24	Khyber Pakhtunkhwa	Mansehra	Hazara University	Department of Communication & Media Studies	BS, M Phil	Public	https://www.hu.edu.pk/departmental-data/16
25	Khyber Pakhtunkhwa	Mardan	Abdul Wali Khan University Mardan	Department of Journalism & Mass Communication	BS, MA	Public	https://awkum.edu.pk/faculties-colleges/faculty-of-social-sciences/jmc/
26	Khyber Pakhtunkhwa	Peshawar	University of Peshawar	Department of Journalism and Mass Communication	BS, MA, M Phil, PhD	Public	http://www.uop.edu.pk/departments/?q=Department-of-Journalism-and-Mass-Communication
27	Khyber Pakhtunkhwa	Swabi	University of Swabi	Department of Journalism & Mass Communication	N/A	Public	https://www.uoswabi.edu.pk/cmscategory/index/44
28	Khyber Pakhtunkhwa	Swabi	Women University of Swabi	Department of Journalism & Mass Communication	Associate, BS	Public	https://www.wus.edu.pk/dpt-social-4Journalism.aspx
29	Khyber Pakhtunkhwa	Swat	University of Swat	Department of Media and Communication Studies	BS	Public	https://uswat.edu.pk/department-of-media-and-communication-studies/
30	Punjab	Bahawalpur	The Islamia University of Bahawalpur	Department of Media & Communication Studies	BS, M Phil, PhD	Public	https://www.iub.edu.pk/department-of-media-studies?f_id=MTQ=
31	Punjab	Bhakkar	Thal University Bhakkar	Department of Communication & Media Studies	BS	Public	https://tu.edu.pk/department-of-communication-media-studies/

No.	Region	Location	University	Department	Degree Programmes	Status	Link
32	Punjab	Faisalabad	Government College Women University Faisalabad	Department of Media & Communication Studies	BS	Public	https://depart.gcwuf.edu.pk/teaching/media_communication_studies/
33	Punjab	Faisalabad	Government College University Faisalabad	Department of Mass Communication	BS, MA, MS	Public	https://gcuf.edu.pk/dept-mass-communication
34	Punjab	Gujranwala	GIFT University	Department of Mass Communication and Media Studies	BS	Private	https://sass.gift.edu.pk/education-index.html
35	Punjab	Gujranwala	IISAT (International Institute of Science, Arts and Technology)	Department of Humanities and Social Sciences	Associate, BS	Private	https://www.iisat.edu.pk/Areas/Website/Department?id=2
36	Punjab	Gujrat	University of Gujrat	Centre for Media & Communication Studies	BS	Public	http://uog.edu.pk/en/uog-academics/centre-for-media-and-communication-studies/introduction
37	Punjab	Lahore	Beaconhouse National University (BNU)	School of Media and Mass Communication	BS, MS	Private	https://www.bnu.edu.pk/smc
38	Punjab	Lahore	Forman Christian College University	Department of Mass Communication	BS, M Phil	Private	https://www.fccollege.edu.pk/department-of-mass-communication/
39	Punjab	Lahore	GC University Lahore	Department of Media and Communication Studies; Department of Digital Communication and Media Technology	BS, M Phil	Public	https://gcu.edu.pk/media-comm.php
40	Punjab	Lahore	Hajvery University	Faculty of Humanities & Social Sciences	BS	Private	https://hup.edu.pk/faculty-of-humanities-and-social-science/
41	Punjab	Lahore	IAC (Institute of Art and Culture)	School of Digital and Cinematic Art	BA	Private	https://iac.edu.pk/school-of-digital-and-cinematic-art/
42	Punjab	Lahore	Kinnaird College for Women	Department of Media Studies	BS, M Phil	Public	https://kinnaird.edu.pk/faculty/dept-media-studies/

No.	Region	Location	University	Department	Degree Programmes	Status	Link
43	Punjab	Lahore	Lahore College for Women University (LCWU)	Department of Mass Communication	BS, MS, PhD	Public	https://lcwu.edu.pk/mass-comm-overview.html
44	Punjab	Lahore	Lahore Garrison University	Department of Mass Communication	BS, M Phil, Diploma	Private	https://lgu.edu.pk/department-of-mass-communication/
45	Punjab	Lahore	Lahore Leads University	Department of Mass Communication	Associate, BS, M Phil	Private	https://leads.edu.pk/department-of-mass-communication/
46	Punjab	Lahore	Lahore School of Economics (LSE)	Department of Media Studies, Art and Design	BS	Private	https://lahoreschoolofeconomics.edu.pk/getFacultyListing/6
47	Punjab	Lahore	Minhaj University	School of Media and Communication Studies	Associate, BS, M Phil	Private	https://www.mul.edu.pk/en/school/mass-communication
48	Punjab	Lahore	NCA (National College of Arts)	Department of Film & Television	BS	Public	https://www.nca.edu.pk/department.php?name=Dept-Film-tv
49	Punjab	Lahore	Rashid Latif Khan University	Faculty of Social Sciences	BS	Private	https://rlku.edu.pk/faculty-of-social-sciences/
50	Punjab	Lahore	Superior University	Faculty of Social Sciences	BS, M Phil, PhD	Private	https://www.superior.edu.pk/faculties/faculty-of-social-sciences/
51	Punjab	Lahore	Green International University	Department of Management Sciences	BS	Private	https://giu.edu.pk/course-detail/bs-media-and-mass-communication-1
52	Punjab	Lahore	University of Central Punjab (UCP)	Faculty of Media & Mass Communication	BS, M Phil, MS, PhD	Private	https://ucp.edu.pk/faculty-of-media-and-mass-communication/
53	Punjab	Lahore	University of Home Economics Lahore	Department of Media and Communication Studies	BS, Diploma	Public	https://uhe.edu.pk/department-of-media-and-communication-studies/
54	Punjab	Lahore	The University of Lahore (UOL)	School of Creative Arts	BS	Private	https://soca.uol.edu.pk/
55	Punjab	Lahore	UMT (University of Management and Technology)	School of Media and Communication Studies	Associate, BS	Private	https://smcs.umt.edu.pk/

No.	Region	Location	University	Department	Degree Programmes	Status	Link
56	Punjab	Lahore	University of South Asia	Faculty of Humanities & Social Sciences	BS	Private	https://raiwind.usa.edu.pk/academics/programs/bs-in-media-studies
57	Punjab	Lahore	University of the Punjab	School of Communication Studies	BS, M Phil, MSc, PGD, PhD	Public	https://pu.edu.pk/home/department/90050/School-of-Communication-Studies
58	Punjab	Multan	Bahauddin Zakariya University (BZU) Multan	Institute of Media Communication Studies	BS, M Phil, PhD	Public	https://bzu.edu.pk/view_department.php?deptID=11
59	Punjab	Multan	Emerson University Multan	Department of Media, Creative Art, Global Political Studies	BS	Public	https://eum.edu.pk/department-of-media-creative-arts-and-global-political-studies/
60	Punjab	Multan	Institute of Southern Punjab	Department of Mass Communication	Associate, BS	Private	https://www.isp.edu.pk/department-of-mass-communication/
61	Punjab	Multan	The Women University Multan	Department of Mass Communication	BS	Public	https://new.wum.edu.pk/department-of-mass-communication/
62	Punjab	Murree	Kohsar University Murree	Department of Mass Communication & Media Studies	BS	Public	https://kum.edu.pk/kum/index.php/department-of-media-communication-studies/
63	Punjab	Narowal	University of Narowal	Department of Mass Communication & Media	BS	Public	https://uon.edu.pk/Academics/dept_of_mass_comm
64	Punjab	Okara	University of Okara	Department of Media & Communication Studies	BS, M Phil, MSc	Public	https://www.uo.edu.pk/faculty-of-management-and-social-sciences/department-of-media--communication-studies
65	Punjab	Rawalpindi	Fatima Jinnah Women University (FJWU)	Department of Communication & Media Studies	BS, M Phil, MS	Public	https://www.fjwu.edu.pk/communication-and-media-studies/
66	Punjab	Rawalpindi	Rawalpindi Women University (RWU)	Department of Media & Communication Studies	BS, MS, PhD	Public	https://www.rwu.edu.pk/department-of-media-and-communication-studies/

No.	Region	Location	University	Department	Degree Programmes	Status	Link
67	Punjab	Sargodha	University of Sargodha	Department of Communication and Media Studies	BS, MA, MS	Public	https://su.edu.pk/department/communication--and-media-studies
68	Punjab	Sialkot	University of Sialkot	Department of Media and Communication Studies	Associate, BS	Private	https://www.uskt.edu.pk/Faculty_of_Humanities_and_Social_Sciences/Department/Department_of_Media_and_Communication_Studies
69	Sindh	Jamshoro	University of Art and Culture (UAC) Jamshoro	Department of Media Art	BS	Private	https://uac.edu.pk/official/departments/
70	Sindh	Jamshoro	University of Sindh Jamshoro	Department of Media & Communication Studies	BA, BS, MA, M Phil	Public	https://usindh.edu.pk/dept/mc
71	Sindh	Karachi	Greenwich University	Department of Media, Art & Design	Associate, BS, MS	Private	https://greenwich.edu.pk/Home/DMCMS
72	Sindh	Karachi	Habib University	School of Arts, Humanities & Social Sciences	BA	Private	https://habib.edu.pk/academics/ahss/communication-and-design/
73	Sindh	Karachi	ILMA University	Department of Media Science	BS, MS	Private	https://ilmauniversity.edu.pk/dmd
74	Sindh	Karachi	Indus University	Department of Media Studies & Design	BS, MS	Private	https://www.indus.edu.pk/fcd.php
75	Sindh	Karachi	IVS (Indus Valley School of Art and Architecture)	N/A	BA	Private	https://www.indusvalley.edu.pk/academics/bachelor-of-communication-design
76	Sindh	Karachi	IBA Karachi	Centre for Excellence in Journalism	MS	Public	https://cej.iba.edu.pk/
77	Sindh	Karachi	Institute of Business Management (IOBM)	College of Economics and Social Development	BS	Private	https://www.iobm.edu.pk/study/college/college-of-economics-and-social-development
78	Sindh	Karachi	Iqra University	Department of Media Studies	Associate, BS, M Phil, MS	Private	https://iqra.edu.pk/department/department-of-media-studies/

No.	Region	Location	University	Department	Degree Programmes	Status	Link
79	Sindh	Karachi	Jinnah University for Women	Department of Media Studies	Associate, BS, M Phil, MS	Private	https://www.juw.edu.pk/department-of-media-studies/
80	Sindh	Karachi	Salim Habib University	Department of Social Sciences and Humanities	BS	Private	https://www.shu.edu.pk/department-of-social-sciences
81	Sindh	Karachi	Sindh Madressatul Islam University	Department of Media & Communication Studies	BS, MS, PhD	Public	https://www.smiu.edu.pk/media/department-of-media-and-communication-studies
82	Sindh	Karachi	University of Karachi	Department of Mass Communication	BS, MA, MS, PhD	Public	https://www.uok.edu.pk/faculties/masscommunication/index.php
83	Sindh	Karachi	Ziauddin University	College of Media Sciences	BS	Private	https://zu.edu.pk/college-of-media-sciences/
84	Sindh	Khairpur	Shah Abdul Latif University Khairpur	Department of Media and Communication Studies	BS, MA, M Phil, MS	Public	http://www.salu.edu.pk/
85	Sindh	Nawabshah	Shaheed Benazir Bhutto University, Shaheed Benazirabad	Department of Media and Communication Studies	BS	Public	https://www.sbbusba.edu.pk/sbbu-main/ms.html
86	Sindh	Sukkur	Sukkur IBA University	Department of Media & Communication	BS	Public	https://www.iba-suk.edu.pk/faculty/Media-Communication

Appendix B: Questionnaires

Survey form for journalism, media and mass communication departments

University name:
Name of the head of department:
Contact number:

1. Does your department offer a dedicated course on countering online disinformation?
    ☐ Yes
    ☐ No

    If Yes, please provide the following information:
    Year when the course was first offered:
    Estimated number of students enrolled in the course until now:
    The degree level at which the course is offered: Undergraduate / Graduate
    Type of course: Core / Elective / General

    If No, are disinformation or fact-checking topics included in other courses: Yes / No
    If topics are included in other courses, then please provide course titles:
    Which disinformation or fact-checking topics are taught in these course(s):

2. Is your department collaborating with or has collaborated in the past with organisations outside the university to develop courses on countering online disinformation or fact-checking? If yes, please share the names of the collaborating organisations:

3. Does your department offer a dedicated course on AI?
    ☐ Yes
    ☐ No

    If Yes, please provide the following information:
    Year when the course was first offered:
    Estimated number of students enrolled in the course until now:
    The degree level at which the course is offered: Undergraduate / Graduate
    Type of course: Core / Elective / General

    If No, are AI topics included in other courses: Yes / No
    If topics are included in other courses, then please provide course titles:
    Which AI topics are taught in these course(s):

4. Is your department collaborating with or has collaborated in the past with organisations outside the university to develop courses on AI? If yes, please share the names of the collaborating organisations:

5. Does your department have access to digital tools/software for fact-checking?
    ☐ Yes
    ☐ No

6. If Yes, list the tools/software available:

7. How many faculty members in your department specialise in identifying and countering online disinformation and use of digital fact-checking tools? (If none, leave blank):

8. How many faculty members in your department have industry experience related to identifying and countering online disinformation and use of digital fact-checking tools? (If none, leave blank):

9. How many faculty members in your department have a specialisation in the use of AI for journalism? (If none, leave blank):

10. How many faculty members in your department have industry experience related to the use of AI in journalism? (If none, leave blank):

11. Is your department willing to offer specialised or advanced courses on countering online disinformation, fact-checking or AI?
□ Yes
□ No

12. If the answer to Q11 is Yes, then which of the following types of assistance does your department need? (Select all that apply)
□ Course development
□ Faculty training
□ Technology (equipment/lab, etc.)
□ Partnerships or collaboration with media and civil society
□ Visiting subject experts
□ Dialogue and interface with tech sector
□ Other (please specify):

12.A If there are any other special needs, please specify:

13. What is the total number of faculty members in your department:
13.A Number of permanent faculty members:
13.B Number of visiting faculty members:

14. What is the total number of students currently enrolled in journalism, mass communication, and media studies stream (exclude other streams like game studies or drama):
14. A Total number of Undergraduate (BS/BA) students:
14. B Total number of Graduate students (MA/MS/MPhil):

15. If you would like to add any comments, please type here:

<p align="center">*****</p>

Survey form for Computer Sciences and IT departments

University name:
Name of the head of department:
Contact number:

1. Does your department offer a dedicated course on Artificial Intelligence (AI)?
□ Yes
□ No

    If Yes, please provide the following information:
        Year when the course was first offered:
        Estimated number of students enrolled in the course until now:
        The degree level at which the course is offered: Undergraduate / Graduate
        Type of course: Core / Elective / General

    If No, are AI topics included in other courses: Yes / No
        If topics are included in other courses, then please provide course titles:
        Which AI topics are taught in these course(s):

2. Is your department collaborating with or has collaborated in the past with organisations outside the university to develop courses on AI? If yes, please share the names of the collaborating organisations:

3. Does your department offer a dedicated course on countering online disinformation?
- ☐ Yes
- ☐ No

      If Yes, please provide the following information:
          Year when the course was first offered:
          Estimated number of students enrolled in the course until now:
          The degree level at which the course is offered: Undergraduate / Graduate
          Type of course: Core / Elective / General

      If No, are fact-checking topics included in other courses: Yes / No
          If topics are included in other courses, then please provide course titles:
          Which disinformation or fact-checking topics are taught in these course(s):

4. How many faculty members in your department have a specialisation in AI? (If none, leave blank)

5. How many faculty members in your department have industry experience related to AI use?

6. How many faculty members in your department have a specialisation in detecting or countering online disinformation through digital tools? (If none, leave blank):

7. How many faculty members in your department have industry experience related to detecting or countering online disinformation through digital tools? (If none, leave blank):

8. Is your department willing to offer specialised or advanced courses on countering online disinformation and fact-checking?
- ☐ Yes
- ☐ No

9. Is your department willing to offer specialised or advanced courses on AI?
- ☐ Yes
- ☐ No

10. If Yes to Q.8 or Q.9, then which of the following types of assistance does your department need? (Select all that apply)
- ☐ Course development
- ☐ Faculty training
- ☐ Technology (equipment/lab, etc.)
- ☐ Partnerships or collaboration with media and civil society
- ☐ Visiting subject experts
- ☐ Dialogue and interface with tech sector
- ☐ Other (please specify):

10.A If there are any other special needs, please specify:

11. What is the total number of faculty members in your department:
11.A Number of permanent faculty members:
11.B Number of visiting faculty members:

12. What is the total number of students currently enrolled at your department:
12.A Total number of Undergraduate (BS) students:
12.B Total number of Graduate students (MS/MPhil):

13. If you would like to add any comments, please type here:

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Appendix C: Model Course Outline on MIL and Countering Disinformation

This model course outline is designed using the HEC format for the curriculum of media and communication studies.

Course title:
Introduction to Media & Information Literacy

Credit hours: Three (3) hours

Course objectives: The course is designed to introduce students to the concepts of Media & Information Literacy (MIL) and the use of critical thinking skills and digital tools to counter online disinformation.

Learning outcomes: Upon successful completion of the course, the students will be able to: (a) apply MIL concepts to their Internet use to make their digital experience safe and ethical (b) use digital tools for identifying and debunking online disinformation.

Course contents:

- Conceptual understanding
- Week 1: Introduction to MIL key concepts
- Week 2: Learning about biases, representation and critical thinking in media consumption and production
- Week 3: The "information disorder" and the political economy of disinformation
- Week 4: Responses to disinformation and the role of journalism

- Practical skills
- Week 5: Introduction to fact-checking
- Weeks 6 & 7: Use of visual verification tools
- Week 8: Use of OSINT for fact-checking
- Week 9: Responding to AI-generated fakes
- Week 10: Investigating disinformation claims and campaigns
- Weeks 11 & 12: Learning skills for online privacy, data protection and digital safety

- Associated topics
- Week 13: Digital laws and Internet governance
- Week 14: Addressing digital threats
- Week 15: Digital citizenship and information integrity

Teaching methodology:
- Lecture
- Case studies
- Semester project

Assessment:
- Mid-term (30%)
- Case study assignments (40%)
- Project evaluation (30%)

Recommended Reading:
Fact-checking and countering disinformation: A primer for media start-ups, freelancers and journalism students. Coalition Against Disinformation. 2023.

Verification handbook: A definitive guide to verifying digital content for emergency coverage. European Journalism Centre (EJC).

The verification handbook for disinformation and media manipulation. EJC.

The Routledge handbook of discourse and disinformation. Edited by S. M. Maci et. al. 2023.

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Interested universities and academics can contact the Coalition Against Disinformation at contactus@cadpk.com for a detailed or customised outline with expanded contents, weekly lesson plans and teaching materials.

Appendix D: Sample Course Outlines on MIL and AI

These course outlines, courtesy of the departments that were part of the research sample as well as other international institutions, are offered to serve as examples of best practices in course design.

Recognizing and Managing Disinformation

A general course offered by the Riphah Institute of Media Sciences (RIMS) at the Riphah International University.

Course credit hours: 3 / Course contact duration: 48 hours

Course objectives: Develop critical thinking skills to assess information objectively, identify potential disinformation and understand the key characteristics and tactics of disinformation campaigns; Differentiate between misinformation, dis-information, and mal-information. Through this course, students will be able to identify manipulative techniques used in disinformation, employ diverse research methods to find reliable and trustworthy sources and utilize fact-checking tools and resources effectively; Understand the social and societal impacts of disinformation campaigns, cultivate ethical communication practices to counter the spread of disinformation.

Course outcome: By the end of this 48-hour course, students will gain practical skills for recognizing and managing disinformation. They will understand the impact of disinformation during crisis events, learn to analyze disinformation techniques, develop strategies for countering disinformation, explore the role of AI in disinformation, and apply their knowledge through case studies and practical exercises. Through this course, students will build resilience against disinformation and become responsible digital citizens equipped to navigate in the complex information landscape.

Course Contents

- Lesson 1: Introduction to Disinformation
- Lesson 2: Cognitive Biases and Disinformation
- Lesson 3: Analyzing Disinformation Techniques
- Lesson 4: Social Media and Disinformation
- Lesson 5: Case Studies of Disinformation Campaigns
- Lesson 6: Truth, Lies and the Rise of AI
- Lesson 7: Psychological Manipulation and Disinformation
- Lesson 8: Government and Policy Responses to Disinformation
- Lesson 9: Media Literacy and Critical Thinking
- Lesson 10: Fact-checking and Verification Techniques
- Lesson 11: Role of Journalism in Countering Disinformation
- Lesson 12: Technology and Disinformation
- Lesson 13: Building Resilience against Disinformation
- Lesson 14: International Perspectives on Disinformation
- Lesson 15: Future Trends and Challenges in Disinformation

Resources

Digital Investigation Techniques (multi-lingual open source courses). AFP.

Readings

- Posetti, J. & Matthews, A. A short guide to the history of 'fake news' and disinformation. ICFJ.
- Machado, G. & Alaphilippe, A. #BadSources. EU Disinfolab.
- Bateman, J. & Jackson, D. Countering Disinformation Effectively. Carnegie.

Block chain, AI & Machine Learning

A major or elective course offered by the Department of Digital Media at the University of the Punjab's School of Communication Studies.

Course credit hours: 3 / Semester: 6th

Course description: This course gives a basic introduction to block chain, machine learning (ML) and artificial intelligence (AI) and will introduce to understand this rapidly growing field and equip their selves with basic & advanced principles of Artificial Intelligence and latest tools with great mindset.

Learning outcomes: The students will be able to create a distributed and replicated ledger of events, transactions, and data generated through various IT processes with strong cryptographic guarantees of tamper resistance, immutability, and verifiability.

Course Contents

1. Introduction to Blockchain

    What is Blockchain?

    History of Blockchain

    Explaining Distributed Ledger

    Blockchain ecosystem

    Explaining Distributed Ledger

2. Types of Blockchain

    Private/Consortium/Permission-less

    Public/Permissioned implementation difference

    What Blockchain has to offer across Industry?

    Companies currently using Blockchain

    Overview of what we are going to study in this course

3. Key Concepts of the Blockchain

    Mining -Mining algorithm

    Node, peer and block explanation

    Merkle tree and Blockchain

    Consensus Mechanisms-proof of work, proof of stake

    How Bitcoin Blockchain works?

    What is Transaction?

4. Crypto Currency & Bitcoin

5. How Bitcoin Achieves Decentralization

6. Mechanics of Bitcoin

7. How to Store and Use Bitcoins

8. How does Bitcoin work?

9. Introduction to Ethereum

    Ethereum: Blockchain with smart contract

    What is Ether?

    Bitcoin vs Ethereum Blockchain

    What is Ethereum wallet?

    What is Smart Contract?

    Ethereum clients

    Geth Introduction

    Setting up Private Blockchain using Geth

10. Learn Solidity

    Introduction to solidity

    Hands on solidity

    Understand and implement different use cases

    Implement and deploy smart contract on Blockchain

11. Introduction to Artificial Intelligence & Machine Learning

12. Developing a Chatbot

13. Introduction to Object Detection in Deep Learning

14. Objection detection = Classification + Localization

15. Image Classification:

16. Localization in an image

17. Developing a Forecasting Model

18. Introduction to Text Classification

Teaching Learning Strategies:

- Class Discussion
- Projects/Assignments
- Group Presentations
- Students LED Presentation
- Thought Provoking Question

Assignments: Assignments may include special reports, projects, class presentations, field work. The nature of assignments will be decided by the teacher as per the requirements of the course.

Assessment and Examinations:

- Midterm Assessment 35%
- Formative Assessment 25%
- Final Assessment 40%

Disinformation and Digital Information Literacy

A pilot course offered at the University of Helsinki with support from the NORdic Observatory for Digital Media and Information DISorder (NORDIS).

Aims of the course:
Disinformation is a recent scholarly area and topic of public discussions, incited by the emergence of right-wing nationalism exemplified by Trump's presidential victory, Covid-19 pandemic, deepfakes, and other AI-driven disinformation. The term 'disinformation' refers to deceptive information to create harm, gain profit, or advance political goals: While technology and social media platforms did not create the problem of disinformation, they have exacerbated the spread of disinformation.

Examining the larger media environment, including legacy media such as public broadcasters, this course aims to provide a critical and contextualized approach to disinformation studies and equip students to better understand the forms, narratives, policies, and technologies of disinformation as well as the history and role of propaganda in both authoritarian and democratic countries. Students will also gain knowledge of journalistic, policy and civil society attempts to combat disinformation.

This course is designed with the support of the European Digital Media Observatory (EDMO) and its Nordic hub NORDIS (https://nordishub.eu/). Drawing from collaborations of scholars and key professional stakeholders working in the fields of disinformation and digital information literacy, the course aims at providing a holistic picture of the societal, institutional, and civic/individual challenges, as well as policy,

professional, and civic remedies to disinformation. The course syllabus is suitable for Bachelor-level or equivalent and can be upgraded for other levels. All the material in this syllabus – academic literature, reports, audio, and video material – is open-access and utilises the work by NORDIS.

Learning goals:

- Identify and define different approaches to disinformation research, including current trends and challenges in the field.

- Understand the different conceptualizations and critical concepts related to disinformation, propaganda, and information literacy.

- Understand different forms of disinformation and their impacts on societies and the media environment.

- Identify and understand the roles of different stakeholders in countering disinformation and promoting digital information literacy.

- Apply literature and critical terms to analyse disinformation texts and campaigns.

- Apply literature and critical terms to discover and analyse digital information literacy needs.

Learning units

- Fundamentals of the theme, terminology, and academic field.

    Context of the course: EDMO/EU.

    Information disorder: mis-, dis- and malinformation.

    Digital information literacy.

    Stakeholders in disinformation and digital information literacy.

    Disinformation studies as a multidisciplinary field.

    Existing research: advances and gaps.

- Approaches to fact-checking

    Fundamentals: development, actors, networks.

    Practices.

- Forms of disinformation

    Forms of disinformation: history and present.

    Current cases of disinformation.

- Approaches to literacy

    Digital information literacy: foundations, development, practices.

    Examples of literacy tools.

- Approaches to governance

    Policy approaches and challenges (global, EU, national cases)

    Platform self-governance: practices and challenges

For suggested literature and other materials as well as a sample programme, please visit: https://bit.ly/nordiscourse

Appendix E: Universities offering AI Education

The following list is a non-exhaustive record of Pakistani universities that offer degrees and courses on AI. The universities are mentioned in no particular order and were discovered through the research process incidentally.

ITU Lahore

Information Technology University (ITU) offers a bachelor's degree and diploma in AI. The bachelor's degree programme includes coursework in computing, mathematics, automated reasoning, computational modeling, introduction to classical artificial intelligence, artificial neural networks, machine learning and natural language processing. The department of artificial intelligence at ITU has around eight faculty members teaching AI and related subjects.

Comsats University Islamabad

The university's Department of Computer Science offers a Bachelor of Science in AI. The programme also includes practical experience in designing, implementing, and testing AI systems, such as through capstone projects or internships.

NUST

The School of Electrical Engineering and Computer Science offers undergraduate, graduate and PhD programmes in Artificial Intelligence through its Department of Artificial Intelligence and Data Science, which has also set up a Generative AI research group. The university also houses the National Centre for Artificial Intelligence as a centre of excellence that operates research laboratories in six major universities and has developed 221 products and designs.

NED

The Department of Computer Science and Information Technology at the NED University of Engineering and Technology in Karachi offers a bachelor's degree programme in AI. This programme aims to provide students with an in-depth knowledge of tools and techniques along with sound mathematical foundation to create optimized and efficient AI models. The students can also opt for courses related to applications of AI in sectors like bioinformatics, robotics, information security and autonomous vehicles.

Air University

The Department of Creative Technologies at Air University is offering bachelor's, master's and PhD programmes in AI. The department has shared the curriculum for these programmes online, which could be a relevant resource for other universities that want to develop similar programmes.

University of the Punjab

Punjab University's Department of Information Technology offers MPhil and PhD degrees in Artificial Intelligence.

IMS (International Media Support) is a non-profit organisation supporting local media in countries affected by armed conflict, human insecurity and political transition.

Freedom Network is an Islamabad-based independent organisation working in the media and development sectors on research, advocacy and training since 2013.

The Coalition Against Disinformation is an alliance of media, academia and civil society organisations that works to address online disinformation through media and information literacy initiatives in Pakistan.

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