Unit 3.2 Assignment: Summaries and Abstracts

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# Step 1: Summary

The article Educational data mining: A 10-year review by Kalita et al. (2025) provides a systematic overview of research trends in educational data mining (EDM) from 2013 to 2023. The authors examine how EDM tools and methods have evolved to address challenges in analyzing large, complex datasets within educational contexts. The review highlights the most widely applied techniques, including classification, clustering, regression, and association rule mining, which have been used to model student learning, predict performance, and enhance instructional design. Beyond technical methods, the article addresses applications of EDM such as adaptive learning systems, early warning systems for at-risk students, and personalized feedback mechanisms.  
  
A central focus of the review is the ethical and privacy concerns associated with mining student data. The authors note that while EDM has demonstrated the ability to improve learning outcomes, it also raises significant issues regarding student consent, data ownership, and the risk of bias in algorithms. Recent research has increasingly emphasized responsible use of EDM, with calls for stronger frameworks to safeguard sensitive educational data. Overall, the article presents EDM as a field that has matured over the past decade but continues to face important challenges as it expands globally.

# Step 2: Descriptive Abstract

This article reviews research on educational data mining (EDM) conducted over the past decade. It examines the primary tools and methodologies used to analyze student data, explores their applications in areas such as performance prediction and personalized learning, and identifies the scope of educational contexts in which EDM has been applied. The article also outlines the growing attention to ethical and privacy concerns in the field.

# Step 3: Informative Abstract

This article provides a systematic review of educational data mining (EDM) from 2013 to 2023, analyzing trends in methodology, application, and ethics. The authors identify the most common techniques classification, clustering, regression, and association rule mining and highlight their role in improving personalized instruction, student performance prediction, and adaptive learning systems. Applications such as early warning systems and tailored feedback are also noted. The review underscores persistent concerns about student data privacy, algorithmic bias, and ethical use of data. The authors conclude that while EDM has advanced significantly in improving educational outcomes, the field requires stronger frameworks for ethical and secure implementation to ensure responsible future growth.

# Step 4: Reflection

Comparing the descriptive and informative abstracts illustrates their distinct purposes in professional and academic communication. The descriptive abstract provides a quick overview of the article’s scope and content without revealing specific findings or conclusions. This type of abstract is effective when readers only need to know whether the article is relevant to their research or interests. For example, a professor scanning a database for articles on educational technology could quickly determine that the piece covers data mining methods in education, but would not know the detailed findings until reading further.  
  
In contrast, the informative abstract conveys not only the purpose and scope but also the methodology, key findings, and conclusions. This version is more useful for decision-making because it allows readers to understand what the article contributes without needing to read it in full. For instance, a policymaker or instructional designer might rely on an informative abstract to decide whether EDM methods are ready to be adopted in practice.  
  
In my experience, the informative abstract was more challenging to write because it required condensing multiple detailed results into a concise summary while maintaining accuracy. However, it also provides greater value in academic and professional contexts where time and precision are critical.

# References

Kalita, E., Oyelere, S. S., Gaftandzhieva, S., Al-Emran, M., Aljohani, N. R., Lahti, J., & Suhonen, J. (2025). Educational data mining: A 10-year review. Discover Computing, 5, 16. https://doi.org/10.1007/s10791-025-09589-z