Teacher use of digital technologies for school-based assessment: a scoping review

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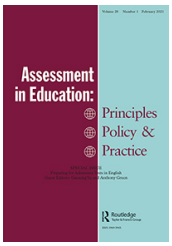

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Research questions:

- How are teachers using digital technologies for school-based assessment purposes?
- How are these assessment-purposed digital technologies used in the enactment of teacher-centred and student-centred pedagogies?

A scoping review of 43 peer-reviewed journals and conference proceedings published from 2009 to 2019.

Using automated marking for assessment efficiencies

Automated response systems

Students answer questions that are automatically marked (e.g. Clickers, Formative, Kahoot, Kubbu, Quizlet, Socrative).

Automated essays and speech analysis

Students submit essays and speech recordings to specialist technologies for feedback.

Feedback:

- scores
- the correct answer
- instructional prompts based on responses.

Benefits

Students

- Immediate feedback
- Improved engagement
- Better assessment preparation
- Improved results

Teachers

- Efficient
- Immediate access to data
- Identify misconceptions
- Track progress

Limits

- Most suited to multiple-choice and short text responses to closed-ended questions.
- Specialist technologies required to mark open-ended or extended responses and speech. May misinterpret expression and designate appropriate departures from convention as errors.

Using assessment features of computer- and web-based learning platforms

Computer- and web-based learning platforms

While engaging, students answer questions that are automatically marked, and in some platforms, are used to personalise instruction (e.g. Algebra Insight, GPAM-WATA, Mastery Connect, OpenEdx MOOC).

Feedback:

- scores
- the correct answer
- instructional prompts based on responses.

Benefits

Students

- Dynamic rather than linear learning
- Promotes intrinsic motivation.

Teachers

- Efficient
- Immediate access to data
- Identify misconceptions
- Track progress

Limits

- Features depend on learning platform used.

Using games, AR and VR to diversify modes of assessment

Games, AR and VR

Students apply knowledge and practice skills via games and/or immersive experiences (e.g. SAVE Science, Semideus School).

Feedback:

- scores
- feedback within context.

Benefits

Students

- Gamification of drill and skill
- Contextualise learning
- Self-directed learning
- Personalisation

Teachers

- Assess inquiry skills
- Overcome limits of materials availability and safety concerns.

Limits

- Games, AR and VR environments require specialist development.

Using technologies to diversify evidence for and modes of assessment

Submission of practical work

Students submit digital evidence of practical and production skills in design, engineering, IT, and PE (e.g. LMS, MOOC).

ePortfolios

Students collect and store digital evidence of learning including drawings, images, graphics, audio, video, documents and multimedia texts, along with reflections, annotations and feedback. Share with peers, teachers and family. (E.g. Book Creator, Keynote, LMS.)

Feedback:

- annotations on evidence
- drawings and audio recordings as well as text-based feedback
- feedback from peers, teachers, family.

Benefits

Students

- Evidence of practical skills
- Evidence from open-ended project work
- Diverse evidence of learning
- Creativity, critical thinking, collaboration and communication
- Improved reflection and self-assessment
- More overt ownership of learning

Teachers

- Assessment more closely aligned to mode(s) learning
- Better and more diverse evidence of learning
- Assess more open-ended activities
- More authentic assessment than exams

Limits

- Not automatically marked

Conclusions

Automated marking and computer- and web-based assessment technologies support established school-based assessment practices.

Game-based and virtual/augmented environments and ePortfolios diversify the modes of assessment and the evidence of learning collected.

Digital technologies:

- improve the efficiency of assessment practices in teacher-centred pedagogies
- provide latitude to assess evidence of learning from more diverse modes of engagement in student-centred pedagogies.

Current research commonly focuses on validating specific technologies and most commonly relates to automated assessment of closed outcomes within a narrow range of learning areas.