Network for Information and Digital Access

The impact of Science Literacy delivery methods - what works?

Summarised Strengths and Weakness

GROUP 2. Education and training – including online

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NOTES
n.d. = no data provided

GROUP 2. Education and training – including online				
Mechanism	**Strengths**	**Weaknesses**	**Reference**
12. Colloquia			**NO REVIEWS**
13. Courses			**NO REVIEWS**
14. Curricula	- introducing HL concepts early in the curriculum can provide students the opportunity to practice and gain confidence throughout the program (Trujillo and Figler 2015) - the higher and more complex is the type of curriculum integration, the greater is the expected gain in terms of learning outcomes - curriculum integration can be a way to teach science and technology within the constraints of an overloaded curriculum - integrating science and technology with other school subjects can compensate for primary teachers' lack of confidence in science teaching due to perceived low self-efficacy and a possible lack of knowledge - costs in terms of teacher personal development (PD) and support are relatively low (Gresnigt et al. 2014)	- the more complex the type of curriculum integration is, the higher the required investment	**Promoting science and technology in primary education: a review of integrated curricula** Gresnigt et al. 2014 **Teaching and Learning Health Literacy in a Doctor of Pharmacy Program** Trujillo and Figler 2015
15. E-learning	- dynamic, highly flexible, adaptable, innovative and rich way to provide learning opportunities (Ruggeri, Farrington, and Brayne 2013; Lahti, Hätönen, and Välimäki 2014; Zafar, Safdar, and Zafar 2014) - E-learning includes a variety of learning interventions and can represent an alternative method of education (Lahti, Hätönen, and Välimäki 2014; Zafar, Safdar, and Zafar 2014) - web-based learning allows ideas to be presented in a variety of ways using multimedia components - video tutorials are playing a role in making students' learning skills in live situations deficient and also in faculty shortage situations (e.g. interventional radiology) (Zafar, Safdar, and Zafar 2014) - increasing availability of Internet access (e.g. via optical fibres, WiFi and 3G/4G mobile phone technology), allows	- the use of ICTs can affect time management, time spent for patient care, and documentation time (Rouleau et al. 2017) - potential disadvantages and inequalities include: • technology-related costs • cost involved in developing programmes • possible technical problems • limited direct interaction • lack of exchanges and relations with other learners • absence of the physical presence of the teacher • decrease in motivation to learn • need for greater self-discipline • attenuation of the desire to compete with other learners • poor access • language barriers	**E-Learning in Postsecondary Education** Bell and Federman 2013 **E-Learning & Information Communication Technology (ICT) in Nursing Education: A Review of the Literature** Button, Harrington, and Belan 2014 **Using e-learning for student sustainability**

- a broad use of content across diverse settings (e.g. home, workplaces, and public places such as libraries, parks, and Internet points) - interactivity and ability to link educational programmes with past experiences and specific needs fit the adult learning paradigm - relative low costs - widespread distribution - reduced dependence on geographical or site boundaries - frequent content updates - personalised instruction in terms of content and self-paced learning - reach to a large number of professionals at a limited cost (Vaona et al. 2015) - participation in lectures and group discussion can be in real time - materials may also be provided asynchronously - e-learning can increase students' own control over the content, place and time of learning (Lahti, Hätönen, and Välimäki 2014) - ICT enables students to access their educators rapidly and also receive responses in a timely fashion via email and discussion forums (Button, Harrington, and Belan 2014) - reductions in students' personal ecological footprint (Diamond and Irwin 2013) - e-learning can: • improve access to higher education among lower-income and academically underprepared students • make postsecondary education more affordable • expand geographic access (e.g. to rural areas) • provide needed flexibility for students who cannot attend traditional classes (e.g. because of full-time work and child-care responsibilities) (Bell and Federman 2013) - lower training costs and time commitment - allow self-directed and self-paced learning by enabling learner centered activities - provide collaborative learning environment - build universal communities - enable standardized course delivery - allow unlimited access to e-learning materials - private access to learning - just-in-time learning	• lack of computer and Internet literacy, which could limit or prevent the participation especially in low- and middle-income countries (Vaona et al. 2015) - face to face traditional classroom interaction might be required and can be offered in blended learning - increased levels of anxiety when using computers - lack of skills associated with ICT can impact students' learning progress - students can be frustrated by unreliable university computer systems, the lack of technical support and the amount of time wasted when computer applications did not work as expected (e.g. computer screen freezing, online connections dropping out and download time) - time for e-learning resources implementation, development and teaching - access to and the appropriateness of staff development surrounding e-learning - educators might need to improve their own ICT skill base - need for the provision of extra support during course development outside of the normal teaching workload and the use of incentives to motivate staff who was currently not adopting e-learning teaching strategies (Button, Harrington, and Belan 2014) - e-learning poses problems for students' academic integrity (i.e. fraud and cheating) - can intensify the digital divides, particularly the third generation divide and lead to differences not only in users' cognitive, social, and psychological development but also in their technology skills and confidence - online courses have often significantly higher dropout rates than face-to face courses. One primary reason students give for dropping out is technical problems (e.g. that students without access to broadband Internet may be especially likely to experience (Bell and Federman 2013) - the nature of the Internet provides no global safeguards for reliability of material or the protection of data against misuse (Ruggeri, Farrington, and Brayne 2013)	**literacy: framework and review** Diamond and Irwin 2013 **Impact of E-Learning on Nurses' and Student Nurses Knowledge, Skills, and Satisfaction: A Systematic Review and Meta-Analysis** Lahti, Hätönen, and Välimäki 2014 **Sustained improvements in students' mental health literacy with use of a mental health curriculum in Canadian schools** McLuckie et al. 2014 **Introducing a Precision Soil Conservation Curriculum: A Pre-and Post-Evaluation** Paulsen et al. 2017 **Impact of Information and Communication Technologies on Nursing Care: Results of an Overview of Systematic Reviews** Rouleau et al. 2017 **A Global Model for Effective Use and Evaluation of E-Learning in Health** Ruggeri, Farrington, and Brayne 2013

	- workforce training monitoring - allows knowledge to be updated and maintained in a more timely and efficient manner (Ruggeri, Farrington, and Brayne 2013)		**Teaching and Learning Health Literacy in a Doctor of Pharmacy Program** Trujillo and Figler 2015 **E-Learning for Health Professionals** Vaona et al. 2015 **Evaluation of use of e-Learning in undergraduate radiology education: A review** Zafar, Safdar, and Zafar 2014
16. Webinars	- accessible to the general public - open to all on online platform	- lack of personalization - low rating aspects	**MOOCs and Library and Information Science Domain: A Review of Selected Literature** Kaushik 2015

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