

Title:

## Online Assessment Platforms: What is on Offer?

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**Running title: Online Assessment Platforms**

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## **Abstract:**

*Aims:* Web-based digital assessment platforms offer several benefits for educational providers. The aims of this study were to evaluate digital assessment platforms suitable for design, delivery and quality assurance of assessments in dental education to facilitate informed choices by educational providers.

*Methods:* The study was based on an online cross-sectional survey. A questionnaire was designed to include relevant details of providers, types of assessments offered, post-assessment psychometrics, remote proctoring, integration with digital learning platforms faculty training, and indicative costs of services. Following a google search, 25 potential providers of digital assessment software were identified and contacted by email

*Results:* Ten companies responded to the questionnaire. All providers, except one, reported extensive experience in delivering high-stake assessments for programs in dentistry, medicine and allied health professions. All companies confirmed availability of a wide variety of assessment formats and also offer remote proctoring either directly or through third parties. Indicative costs of different assessment platforms were also provided.

*Conclusion:* This paper underscores the need for dental institutions to make informed decisions when choosing the most appropriate digital assessment platforms to suit their educational needs. It also provides a snapshot of services offered by commercial providers of assessment platforms. The Association for Dental Education in Europe can serve as a central hub to guide dental institutions on making informed choices for suitable assessment platforms to address their needs.

**Keywords:** Assessments; Dental; Education; Online

## Introduction

Assessments constitute a core element of dental education and serve to inform decisions regarding academic progression of students.<sup>1</sup> Education providers are required to uphold high standards of assessment to ensure fairness, transparency, and demonstrate constructive alignment between assessment content, methods of teaching and learning and the learning outcomes of the program.<sup>2,3</sup> The delivery of education in general and assessments in particular has been through a rollercoaster ride following the start of COVID-19 pandemic. Social distancing and cross-infection control measures have had the most remarkable impact on the delivery of education in living memory.<sup>4</sup> Like all spheres of life, COVID-19 pandemic highlighted lack of preparedness of educational providers. Nevertheless, dental educators have made huge progress to mitigate against the impact of COVID-19. Dental education has benefitted from a variety of online platforms such as, Zoom, Google rooms, Skype, Microsoft Teams, WebEx along with numerous bespoke applications developed for remote teaching, assessments, meetings, and patient consultations. Educational environments in healthcare settings may require appropriate physical and temporal separation measures during face-to-face teaching and assessments for the foreseeable future. Dental educators must continue to use a blended approach to teaching and have plans in place for remote assessments if required in the future. These measures require efficient use of technology.<sup>5</sup>

Web-based digital assessment platforms offer several benefits for educational providers including secure storage of assessment content, design and blueprinting of assessments based on a range of formats such as multiple-choice questions (MCQs), Extended matching questions (EMQs), Short answer questions (SAQs), essay questions, hot spot, true/false and “fill in the blank” items, to name a few. An audit trail

is available for the assessors to track amendments to test items, usage statistics and item performance during successive assessments. Most modern assessment software are designed for online and offline assessments for face-to-face and online delivery with the option of remote proctoring. A user-friendly interface allows candidates to highlight questions, record notes, identify questions which have been attempted or remain unanswered, and flag potentially inaccurate questions for review. Assessment scores for individual candidates are calculated automatically and results can be released immediately on the digital learning platforms pending any quality checks and post assessment review by the faculty.

The aims of this study were to evaluate digital assessment platforms suitable for design, delivery and quality assurance of assessments in dental education to facilitate informed choices by educational providers.

## Methods

The study was based on an online cross-sectional survey. A questionnaire was designed to include relevant details of providers, types of assessments offered, post-assessment psychometrics, remote proctoring, integration with digital learning platforms (blackboard, moodle etc.) faculty training, and indicative costs of services.

A google search was undertaken to identify commercial companies offering assessment software for healthcare educational programs including dentistry, medicine, nursing, pharmacy alone and in combination(s). The search identified 25 potential providers of digital assessment software who were contacted by email. The providers were given information on the purpose and scope of the survey and invited to record their responses on google forms. It was made clear that the information provided may be disseminated in peer reviewed professional journals and company representatives were required to sign a consent form online prior to recording their responses. Reminders were sent on three separate occasions, each after an interval of 3 weeks.

## Results

Ten companies responded to the questionnaire. One company, Respondus, Inc. based in the United States was excluded because it only offers services for developing assessment applications and does not provide an assessment platform. Details of remaining nine providers along with locations of head offices are summarized in Table 1. All providers, except one, reported extensive experience in delivering high-stake assessments for programs in dentistry, medicine and allied health professions. Civica Assess does not have any contracts with dental or medical institutions at present but the provider is confident that their assessment platform is suitable for these programs. The key features of various assessment platforms are summarized below:

- A wide range of *assessment formats* are offered by the providers including common formats used in dental education as well as other less common and novel formats depicted in Table 1.
- *Integration* with the digital learning platforms such as blackboard, moodle etc. is offered by all providers.
- *Post assessment psychometrics* are generated on all assessment platforms.
- *Remote proctoring* is offered by all providers included in Table 1. However, two providers (Assessment Systems Corporation and Open Assessment Technologies) have outsourced remote proctoring to third parties.
- *Faculty training* is delivered by all providers during the initial set up. Further training may be arranged periodically on request by subscribing institutions but may entail additional costs.

The companies were also asked to provide an indicative quote to administer assessments for five cohorts of 100 students each over five assessment occasions annually. Responses by the companies are shown in Table 2



## Discussion

The purpose of this publication is to underscore the need for dental institutions to make informed decisions when choosing the most appropriate digital assessment platforms to suit their educational needs. Assessments have a huge impact on student experiences and feedback on the quality of their educational program. Moreover, the design, delivery and quality assurance of assessments is an immensely challenging task for the education providers and often require significant investment of resources.<sup>6</sup>

Senior management teams in dental institutions need to be aware of the wide range of commercial providers of digital assessment platforms available in the market to explore their services, financial costs. It is also important to evaluate the quality of support provided by companies including faculty training, and availability of remote proctoring. This approach can help institutions to make informed decisions to suit their needs.

It is acknowledged that there are many more providers of digital assessment platforms in the market and new ones are under development following the outbreak of COVID-19 pandemic. The authors have only managed to receive limited number of responses and the current review is by no means comprehensive. Some key providers in medical education such as *Speedwell* (<https://www.speedwellsoftware.com/>) did not respond to requests for information. Nevertheless, we have used Speedwell at Peninsula Dental School, UK for many years it has proved to be a user-friendly and comprehensive assessment platform. Another popular platform based in Netherlands is TestVision (<https://www.testvision.nl/en/>) and it offers services in Dutch and English. Positive feedback on the utility of TestVision for dental assessments was received from faculty based at The Academic Centre for Dentistry in Amsterdam (ACTA). The

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current publication has identified some of the established providers in the market with a snapshot of their services. It is acknowledged that there are many more commercial providers in the market and readers may be familiar with additional online assessment platforms which are in use at dental institutions across Europe and further a field. Moreover, several open-source assessment software options are available on the internet which are free to use. While open-source options may appear to be attractive due to minimal running costs for the institutions, they may not be secure, and developers may not offer technical support, rendering them unsuitable for use in high stake assessments. In any case, the purpose of this paper is to reiterate the value of online platforms for seamless administration of dental assessments. Learning from our experiences during the COVID-19 pandemic, it is essential that dental institutions enhance their preparedness for unforeseen challenges to the delivery of education and assessments.

The Association for Dental Education in Europe (ADEE) is the premier organization responsible for the promotion of dental education in Europe and beyond and one of the mission statements of ADEE includes “*..development of assessment and examination methods*”. Readers are encouraged to familiarise themselves with the “The Graduating European Dentist” suite of documents developed by the ADEE which provide guidelines on best academic practice for European undergraduate dental education including curriculum structure, teaching and learning as well as assessments.<sup>7</sup> The Digital Education pages on the ADEE website (<https://adee.org/digeddent-digital-education-dentistry>) offer comprehensive information on digital education including online assessments and the readers may find these resources very helpful for their institutions. It is suggested that ADEE may assist dental institutions choose appropriate

digital assessment platforms by collating relevant and updated information directly from the providers. Dental educators and decision-makers may access this information on the ADEE website to facilitate identification of a suitable assessment platform to suit their needs and circumstances.

**Conclusion:**

This paper underscores the need for dental institutions to make informed decisions when choosing the most appropriate digital assessment platforms to suit their educational needs. It also provides a snapshot of services offered by commercial providers of assessment platforms. The Association for Dental Education in Europe can serve as a central hub to guide dental institutions on making informed choices for suitable assessment platforms to address their needs.

### ***Conflict of Interest***

The authors do not have any conflict of interest

### **Data Availability Statement**

The data that support the findings of this study are available on request from the corresponding author.

### **Acknowledgements**

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**Table 1: Assessment platform providers and types of assessments offered**

Provider	Country	Types of Assessments						
		MCQs*	EMQs**	True/False	SAQs***	Hot spot	OSCE****	Others
1. Assessment Systems Corporation <a href="https://assess.com/">https://assess.com/</a>	United States	Yes	Yes	Yes	Yes	Yes	Yes	Adaptive testing, multistage testing, item response theory, essays with online marking, linear-on-the-fly testing, automated item generation
2. Civica - Civica Assess <a href="https://www.civica.com/en-gb/product-pages/assessments/">https://www.civica.com/en-gb/product-pages/assessments/</a>	United Kingdom	Yes	Yes	Yes	Yes	Yes	-	Other complicated types of question formats can be provided
3. ExamSoft Worldwide LLC / ExamSoft Portal & Exemplify <a href="https://examsoft.com/">https://examsoft.com/</a>	United States	Yes	Yes	Yes	Yes	Yes	Yes	Audience Response, Performance Assessments, Assignment Upload
4. Fry-IT (Products: Practique and Kaizen) <a href="https://fry-it.com/">https://fry-it.com/</a>	United Kingdom	Yes	Yes	Yes	Yes	Yes	Yes	Very Short Answer Questions (VSAs), Prescribing Questions, Workplace based assessments (mini-CEX, DOPS, CbDs etc)
5. iCognitus4ALL - IT Solutions (iCognitus) <a href="https://www.icognitus.com/#products">https://www.icognitus.com/#products</a>	Portugal	Yes	Yes	Yes	Yes	Yes	Yes	Viva, Long-list; Sequential items (Clinical Cases); Computerized Adaptive Tests; Automated Item Generation
6. Inspera Assessment <a href="https://www.inspera.com/">https://www.inspera.com/</a>	Norway	Yes	Yes	Yes	Yes	Yes	Yes	-
7. Open Assessment Technologies/ TAO Testing <a href="https://www.taotesting.com/">https://www.taotesting.com/</a>	Luxembourg	Yes	Yes	Yes	Yes	Yes	-	Order Interaction, Associate Interaction
8. Questionmark <a href="https://www.questionmark.com/">https://www.questionmark.com/</a>	United Kingdom	Yes	Yes	Yes	Yes	Yes	-	Drag and Drop, Essay, File Upload, Fill in the blanks, job Task Analysis, Knowledge Matrix, Likert, Pull down, Multiple Response, Test Match, Ranking
9. TestReach <a href="https://www.testreach.com/">https://www.testreach.com/</a>	Ireland	Yes	Yes	Yes	Yes	Yes	-	A wide range of auto-scored and long-form question types

Multiple choice questions; \*\*Extended matching questions; \*\*\*Shot answer questions; \*\*\*\* Objective structured clinical examination

**Table 2: Indicative costing of digital assessment platforms**

<b>Provider</b>	<b>Response</b>
1. Assessment Systems Corporation	\$ (USD) 7,000
2. Civica - Civica Assess	Up to £ (GBP) 40K set-up and £40K Annual Licence. Per candidate (depending on complexity) could equate to between £1 to £2 per multiple choice assessment and £3 to £5 for the essay response questions.
3. ExamSoft Worldwide LLC / ExamSoft Portal & Exemplify	Pricing based on scale, length of agreement, and specific client need with consideration towards products required for service.
4. Fry-IT (Products: Practique and Kaizen)	Variable based on region, volume and type of institution
5. iCognitus4ALL - IT Solutions (iCognitus)	2500 test-sittings can range from 4 euros-10 euros/test sitting. Depends on volume and service (only platform or full setting and administration of tests)
6. Inspera Assessment	More information needed to provide a quote-
7. Open Assessment Technologies/ TAO Testing	Up to 200,000 tests delivered per year from € (Euro) 5,750 per month
8. Questionmark	Approx. \$ (USD) 14,400 for 500 students taking 5 assessments each annually.
9. TestReach	2,500 exams (5 cohorts x 100 x 5 exams) of 2 hours duration each, each exam would cost in the region of € (Euro) 45 each.