



Research Paper

Enhancing surgical internship experiences: The potential of a supporting digital curriculum

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HIGHLIGHTS

- Centralization of care can jeopardize learning experiences during surgical internships
- A structured surgical internship curriculum can address such educational challenges and is appreciated by interns
- The digital curriculums' modular structure and comprehensive study materials support self-directed learning
- Interactive components help interns grasp the complexity and relevance of surgical knowledge, enhancing their learning experience.

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ABSTRACT

Background: Centralization of care jeopardizes interns' learning experiences and necessitates educational changes. Here we present the development and evaluation of a structured digital curriculum, offered in addition to the clinical internship, to address these challenges.

Methods: The structured digital curriculum was implemented in the VUmc/Amsterdam UMC surgical internship program in the Netherlands. The curriculum used a modular format built around a skill or clinical condition. Each module included background information, digital elements like e-learning and interactive vlogs, and self-assessments. From April 1st to June 30th, 2022, we conducted a mixed-methods evaluation comparing interns' experiences between the conventional and digital curriculum through surveys and interviews.

Results: Thirty-nine interns (28.1 %) completed the survey, 17 (24.2 %) from the traditional curriculum and 22 (31.9 %) from the structured blended curriculum. Results from the interviews triangulated and complemented survey results. Interns appreciated both curricula (course marks 7.4 ± 2.0 vs. 8.1 ± 1.1 , $P = 0.207$). The intervention cohort specifically appreciated the structured and comprehensive presentation of available study materials, which resulted in a sense of empowerment.

Conclusions: Integrating a structured digital curriculum to support clinical internships provides interns with comprehensive, readily accessible knowledge, refines their understanding of clinical topics, and results in feelings of empowerment. The combination of clinical and digital education ensures adequate exposure to subjects vital for future doctors, even if clinical exposure is limited. Thus, using a structured digital curriculum prepares the intern and helps the internship program to adequately navigate future medical challenges.

Key message: Centralization of care jeopardizes interns' learning experiences and necessitates educational changes. A structured digital curriculum can empower interns in this scenario by providing readily accessible knowledge which refines their understanding of clinical topics.

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Introduction

Medical internships provide hands-on experiences in the patient care setting and are crucial for the development of clinical skills of medical students. Under the guidance and supervision of experienced healthcare professionals, interns receive feedback and mentorship, helping them prepare and grow into their future role as doctors [1].

However, centralization of care jeopardizes interns' learning experiences in the Dutch healthcare system. While centralization is expected to improve care quality and efficiency while lowering rising healthcare costs, interns' exposure to relevant clinical cases can no longer be guaranteed, putting them at risk of being professionally underprepared [2]. The COVID-pandemic emphasized this challenge by introducing social distancing and physical attendance restrictions [3,4].

To address these concerns, the MD educators of the VUmc/Amsterdam UMC surgical internship curriculum created a wide range of digital educational tools such as webinars, e-learning, and interactive vlogs (in which the doctors is followed by a camera as the intern during clinical rounds does). These tools are incorporated in a structured digital curriculum and offered in addition to the clinical internship. We hypothesized this would benefit interns and educators by providing flexibility, accessibility, and individualized learning [5].

In this article we therefore describe the development, implementation, and mixed-methods evaluation of a structured digital curriculum to support surgical interns. By sharing our efforts, we aim to demonstrate how digital tools structured in a curriculum can support internship education for a specialization dealing with centralization of care.

Methods

Setting and curriculum

In the Netherlands, the study of medicine spans six years. Three years of theoretical studies followed by three years of clinical internships. The surgical internship in this study lasts 12 weeks, with three weeks of classroom-based activities to prepare interns for the clinical tasks of the final nine weeks. COVID-19 restrictions forced the transition of internship education to digital formats in March 2020. Unstructured interviews with interns guided the digitalized curriculum's refinement during the first months, highlighting the need to improve structure and applicability. As a result, these aspects were prioritized in the new curriculum, which was implemented in February 2021.

Fig. 1 depicted the curriculum's three main sections: syllabus, skills, and clinical conditions. The Syllabus section included standard information, a recommended study schedule, anatomical item lists, and integrated anatomy study tools. Interns were able to access videos and vlogs that covered both technical and non-technical skills such as suturing and patient handover. The Clinical Conditions section (Fig. 2) was divided into modules based on medical domains (e.g., gastrointestinal, trauma), each containing study sections with relevant materials, interactive vlogs, and self-tests for knowledge review.

Each clinical condition contained several study tools. Anatomy tools [6–8] supported visualization of surgical approaches using 3D anatomical images and references. Interactive vlogs provided clinical experiences, such as outpatient clinic visits and surgical procedures, and included embedded questions for active learning. Interactive e-learning provided case-based materials in addition to videos which covered surgical skills, lectures, and case discussions. iBooks were available to provide extensive background information.

Evaluation

We compared the structured digital curriculum (intervention group) with the traditional curriculum (baseline group) using a longitudinal mixed-methods approach. The study adhered to mixed-methods research principles outlined by Schifferdecker and Reed [9]. By

combining quantitative data from electronic surveys and qualitative data from semi-structured interviews, we aimed to achieve a comprehensive comparison and triangulation of results [13]. Interview data were analyzed immediately after each interview to facilitate constant comparison and allow flexibility in identifying and exploring new topics. Survey data were analyzed after the study period concluded. Quantitative and qualitative results were aggregated through discussions within the research group. Ethical approval was waived by the institutional review board due to the voluntary nature of participation and use of anonymized data.

Surveys

The survey was based on validated research tools focused on educational innovations, with additional curriculum-specific items [10,11]. It consisted of 29 questions, across four categories: general experiences, structure and design, completeness and quality, and learning experiences (Appendix A). SurveyMonkey (SurveyMonkey Inc., San Mateo, California, USA) was used to create the survey. All eligible interns received e-mail invitations and reminders of the survey during seminars. No compensation was offered for participation.

Categorical data were analyzed using Chi-square or Fisher's exact tests and presented as numbers with percentages. Continuous variables were assessed for normality using QQ-plots and histograms and analyzed using the Student's *t* or Mann-Whitney-*U* test. Data were presented as mean \pm SD or median [Interquartile range (IQR)]. Results were calculated two-sided, presented with 95 % confidence intervals (95 % CIs), and considered significant when $P < 0.05$. All analyses were

























Syllabus	
 Introduction	 Endterms
 Practical information	 Study plan
 Anatomy	
Skills	
 Suturing and Knots	 Casts and wound dressings
 Handover	 To the OR
 ATLS	 Catheter insertion
Clinical conditions	
 General principles	 Soft tissue infections
 Acute abdomen	 Abdominal herniations
 Endocrine surgery	 Trauma surgery
 Vascular surgery	 Oncological surgery
 Benign surgery	 Paediatric surgery
 Urology	 Orthopaedia
 Plastic surgery	

Fig. 1. Curriculum sections.

conducted SPSS version 28.0 (IBM Corp. Released 2016. IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp.). Open-ended questions were analyzed according to the qualitative analysis methods used for the interviews.

Interview

A series of exploratory and semi-structured interviews were conducted to complement the survey findings and gain a thorough understanding of interns’ experiences and perspectives. The survey categories and questions were used as interview guide and provided the structure for the inductive thematic analysis. We used a constructivist approach and followed the thematic analysis guidelines discussed by Braun & Clarke [12]. Participation was voluntary and no compensation was offered. Interviews were audio-recorded after explicit permission of the participant, transcribed verbatim using Amberscript (2023 Amberscript Global B.V.), and analyzed using MAXQDA Plus 20.0.1 (VERBI Software GmbH Berlin, 2022). The number of interviews was naturally limited by the duration of the study period and the number of volunteers.

Results

Quantitative results – the survey

A total of 39 interns completed the survey, resulting in an overall response rate of 28.1 %. Response rate between the conventional group and structured curriculum-group varied from 24,2 % (n = 17) and 31.9 % (n = 22), respectively. No differences between participants of the cohorts were observed on general characteristics (Table 1). Overall, the course was very well appreciated by both the baseline and structured digital curriculum (8,1 ± 1,1 versus 7,4 ± 2,0 on a scale of 1–10), with no relevant and significant differences in outcomes (Table 2).

Qualitative results – the interviews

Seven interns volunteered to participate in the interview, all female, three of the conventional curriculum and four of the structured curriculum. Results from the interviews both complemented and triangulated the results from our survey, indicating that interns were overall very positive with regard to the curriculum provided. Table 3 features selected quotes on the predefined components and extracted themes.

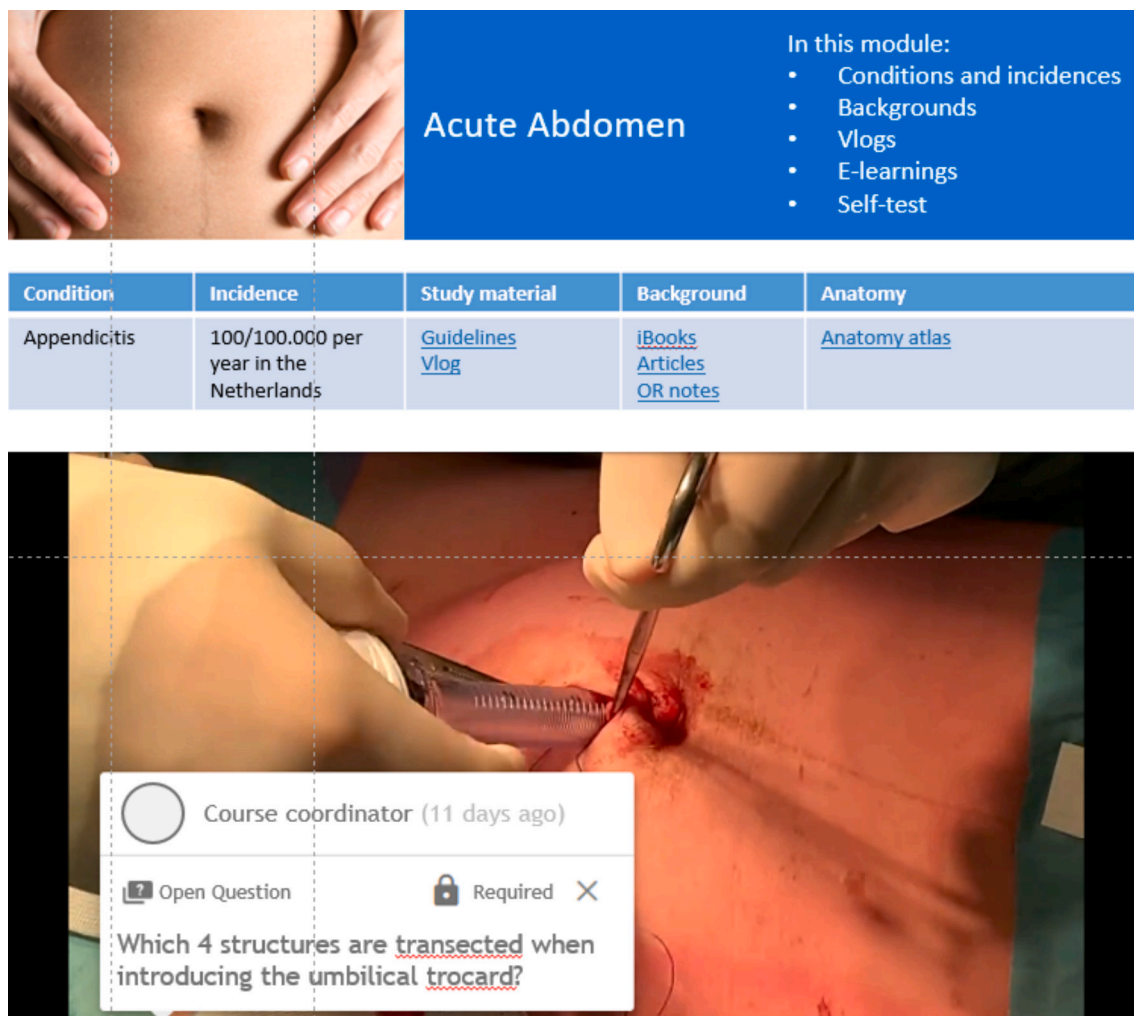


Fig. 2. a–c: Clinical condition, overview of study materials, and Vlog.

- a: “Acute abdomen” module and sections.

- b: Example of overview page within the “Acute abdomen” module. Within this module other conditions were cholecystitis, diverticulitis, ileus, invagination, pancreatitis, perforation, and volvulus.

- c: Frame of vlog of laparoscopic appendectomy, the questions are implemented by the course coordinators and students need to answer the question to proceed with watching the video.

Table 1
General characteristics of survey participants.

	Baseline cohort (n = 17)	Intervention cohort (n = 22)	P value
Age	23,8 ± 1,1	24,1 ± 1,6	0,569
Sex (female)	15 (88,2 %)	18 (81,8 %)	0,582
Internship phase			0,307
Preparatory phase	5 (29,4 %)	10 (45,5 %)	
(Post) clinical phase	12 (70,6 %)	12 (54,5 %)	
Location introductory weeks			0,117
University Medical Centre (UMC)	5 (29,4 %)	12 (54,5 %)	
Affiliated training hospital	12 (70,6 %)	10 (45,5 %)	
Location clinical weeks			0,568
University Medical Centre (UMC)	4 (23,5 %)	7 (31,8 %)	
Affiliated training hospital	13 (76,5 %)	15 (68,2 %)	
Interested in surgery as future specialty (yes)	9 (52,9 %)	10 (45,5 %)	0,643

Table 2
Differences in survey items between conventional and structured curriculum participants.

Survey component	Question	Baseline cohort (n = 17)	Intervention cohort (n = 22)	P value
General experiences	Marks for the course (scale 0–10)	7,4 ± 2,0	8,1 ± 1,1	0,207
	Hours of use of the course per week			0,866
	0–2 h	2 (11,8 %)	3 (13,6 %)	
	2–5 h	7 (41,2 %)	7 (31,8 %)	
	5–10 h	5 (29,4 %)	8 (36,4 %)	
Design and structure	10–20 h	3 (17,6 %)	3 (13,6 %)	
	>20 h	–	1 (4,5 %)	
	Other internships should offer a digital curriculum such as the digital surgery curriculum	4 [4–4,5]	4 [3,5–5]	0,931
	The digital curriculum offers clear instructions on how to use the digital curriculum	4 [4–4,5]	4 [4–4]	0,44
	The digital curriculum helps me prepare for the clinical component of my surgical internship	4 [4–4,5]	4 [4–5]	0,492
Completeness and quality	The digital curriculum is constructed logically, and finding what you need is easy	4 [3–4]	4 [3–4]	0,989
	The digital curriculum helps structure skills and knowledge needed for the surgical internship	4 [4–4]	4 [4–5]	0,424
	The digital curriculum makes me aware of my level of knowledge and what I need to learn for the learning goals of the surgical internship	4 [3–4]	4 [3–4]	0,604
	The digital curriculum encourages me to study new clinical topics	4 [3–4]	4 [3,75–5]	0,292
	The digital curriculum provides me with useful feedback	3 [2–3,5]	3 [2,75–4]	0,585
Learning experiences	The digital curriculum provides me with well-timed feedback	3 [3–3]	3 [2,75–3]	0,922
	The digital curriculum makes me curious about the surgical clinic	4 [4–5]	4 [4–4]	0,333
	The digital curriculum arouses my interest to study the material further.	4 [3–4]	4 [3–4,25]	0,685
	I have used the digital curriculum to study clinical topics that I don't encounter in practice	3 [2–4]	4 [2–4]	0,347
	Learning through the digital curriculum was efficient	4 [4–4]	4 [4–4,25]	0,672
	I thought the most instructive module was:			0,461
	E-learning	9 (52,9 %)	11 (50 %)	
	Vlogs	4 (23,5 %)	3 (13,6 %)	
	iBooks	2 (11,8 %)	1 (4,5 %)	
	Videos of suturing and knots	–	2 (9,1 %)	
	Videos of recorded lectures	1 (5,9 %)	4 (18,2 %)	
	Articles	–	–	
	I would like to have more subjects within the module:			0,169
	E-learning	6 (35,3 %)	10 (45,5 %)	
	Vlogs	1 (5,9 %)	4 (18,2 %)	
iBooks	3 (17,6 %)	–		
Videos of suturing and knots	1 (5,9 %)	1 (4,5 %)		
Videos of recorded lectures	4 (23,5 %)	2 (9,1 %)		
Articles	1 (5,9 %)	2 (9,1 %)		
I believe that this module provides me with relevant information for the learning goals of the surgical internship			0,759	
E-learning	5 [4–5]	5 [4–5]	0,715	
Vlogs	4 [3–5]	4 [3–5]	0,271	
iBooks	4 [3–4,75]	3,5 [3–4]	0,312	
Videos of suturing and knots	4 [3–4]	4 [3–5]	0,048	
Videos of recorded lectures	3 [2,25–3,75]	4 [2,75–5]	0,988	
Videos of preparatory week lectures	3 [3–4]	3 [2,75–4]		

Statistical significance achieved.

Mixed-methods analysis

General experiences

Interns from both groups appreciated the course. This was especially true in comparison to previous internships which hardly used digital tools or did so in a poorly structured way. Major differences between the groups were that the baseline group felt overwhelmed by the amount of information and missed structure in the digital material provided. Conversely, interns who used the structured digital curriculum praised the structure and appearance of the curriculum. In the open-ended questions of the survey, several interns indicated that they missed personal interactions with and physical teaching moments of surgeons during the pandemic, which would have elevated their experience of the provided digital material.

Design and structure

There was agreement amongst interns from both groups that a lot of digital material is provided during the internship, without it being obligated. This was especially challenging due to the differences in how different hospitals used the digital material. Due to structural differences the baseline and intervention group experienced this differently. The

Table 3
Selected quotations interns regarding their experiences and vision with the surgical internship curriculum.

Themes	Conventional curriculum		Structured digital curriculum	
	Source	Quote	Source	Quote
General experiences	No.1	So much information was provided, which I liked, and which was such a difference with the previous internship. However, inherent to surgery it is so much information that it is just too much to complete together with all other obligated assignments in the time that is provided in the internship.	No. 4	I thought it looked very well designed; I was actually a bit surprised. Very clear structure and modern - very different from the digital courses in other internships.
Design and structure	No. 2	I know that the interns who were in the UMC for their preparatory weeks focused mainly on e-learnings and a lot in hospital during the days. While I did my preparatory weeks somewhere else, and we just had a lot of lectures and had to complete the e-learnings on top of that - which you will not always do because they are not obligated	No. 5	In our last internship there was such a major difference in education between the training hospitals. This curriculum provides all materials in the same way to everyone. Additionally [...] the results of what you get out of the curriculum depend on the energy you put in it. If you want to complete all modules, read all iBooks and search for additional information, you can - and in that way you are the master of your learning process.
Completeness and quality	No. 3	I liked the vlogs. They were short and dynamic, but because viewing them was very passive... Well, I watched them all, and think I learned something from them, but it just wasn't as efficient as the e-learnings	No. 6	[These vlog-questions] really make you think, and the answer isn't always so obvious. So, I like those and the fact that you immediately see your answers. It's not just watching a vlog, it's a real learning experience.
Learning experiences	No. 1	Well, the recorded lectures, I thought their quality varied. Sometimes their quality wasn't that good, segments had been cut, or they weren't that useful	No. 4	The lectures sometimes triggered me to go and research other subjects, and I liked that you could watch them again or watch them at twice the speed
	No. 2	If you use an e-learning you often only study one subject, while usually a patient is presented in these [recorded] lectures, and nine or ten conditions are covered		

baseline group did not know where to find all the material, missed a concrete study plan, and as a result often did not use the digital material – resulting in a feeling of being overwhelmed. Conversely, the structured curriculum group presented study materials comprehensively and applicable on a day-to-day basis and were therefore a valuable addition to the study materials provided by their hospitals. As a result, the students with access to the structured digital curriculum could therefore approach subjects more pragmatically and felt empowered rather than overwhelmed by the digital materials.

Completeness and quality

The completeness and quality of the curriculum as a whole were well appreciated in both groups, although there were some differences in how the vlogs were perceived. In the conventional curriculum these vlogs were relatively hard to find and did not provide any activating learning components. Therefore, participants saw them as being “extra” and only viewed them if they had time. In the new curriculum, vlogs were a structured part of the modules, and activating questions were added. As a result, interns from this group used vlogs as a way to see the clinical implications of studied materials, to test their clinical reasoning skills, and to provide (themselves) with feedback.

Learning experiences

The baseline group used the curriculum mainly for self-study and in the preparatory weeks, while the structured curriculum group also used it in the clinical weeks. E-learnings were perceived as being the most efficient way to study subjects in both groups, while recorded lectures were often deemed to be of inferior quality. The better appreciation of e-learnings in the survey was less obvious in the interviews. Interns from both groups mentioned that lectures provide a more in-depth coverage of subjects, and their desire for more physical lectures. The only difference in interviewees' perception was the appreciation of the options to rewatch or change the speed of the videos in the structured curriculum group. They also indicated that the self-study tests which are presented during videos are often limited to a few clinical issues, while in reality, patients are more complex.

Discussion

Medical education must be adaptable in the face of a variety of

challenges. These challenges can range from acute and immediate situations, such as a pandemic, to more gradual changes in the healthcare landscape. The centralization of care, for example, may result in fewer opportunities for students to encounter a diverse range of clinical conditions during their internships. Based on the results of this controlled study we conclude that our structured digital curriculum for a surgical internship shows potential to resolve these challenges and empower students' self-directed training. Interns were highly satisfied with the curriculum and its components in both the conventional and structured digital curriculum. The modular set-up of the structured curriculum and the comprehensive presentation of available study materials were specifically appreciated, as it aided their self-directed training and empowered their learning experiences. Additionally, the interactive nature of learning components such as the vlogs resulted in interns' appreciation of the complexity and clinical relevance of surgical knowledge and skills and enhanced their learning experience.

Digitally supported curricula are certainly not a new phenomenon, yet their use across medical specialties has evidently increased since the COVID-19 pandemic. Outcomes in literature of using such curricula are consistently positive independent of use by under- or postgraduates, and whether this is with regard to knowledge, skills, or experiences such as self-efficacy or confidence [14–19]. It is, however, important to recognize that digitalized curricula are not a one-size-fits-all and require significant investments in time, energy, and materials, and the cooperation of all providers of education and supporting staff – which is the reason we did not only share our results but also the development phase. As with all educational modalities, constructive alignment as suggested by Biggs in 1996, is essential for successful use of the curriculum, and we highly propagate designing a curriculum using a backwards design [20]. This starts by defining learning needs and objectives, followed by how these objectives will be assessed, and only then defining what a curriculum should look like and how it should be provided. If followed accordingly, this should result in a curriculum which is aligned with a learner's needs and can be assessed on its merits.

The interviews revealed two important factors which affected our outcomes; the amount of digital support in the conventional curriculum was already significantly better and/or better structured than in previous internships. Interns indicated that this was a major factor in their overall appreciation of the curriculum and may explain the similarities in appreciation between the curricula in the surveys. Additionally, there

were differences in adoption of the digital curriculum between different training hospitals. This challenge is not recognized in other studies and requires additional attention when implementing digital curricula across institutions. An advantage of digital material is that it can be used asynchronously and based on interns needs, which was elaborated on in the interviews, yet to truly resolve this issue cooperation with all education providers is key – as mentioned before [15]. That way, the structured nature of the curriculum can be used to its fullest potential and have the most effect on educational outcomes [14].

While our study compared outcomes between structured digital and conventional curricula, several limitations impacted our analysis. Firstly, privacy concerns prevented us from evaluating Canvas data, leaving us unable to assess the curriculum's impact on interns' clinical performance and future roles as doctors. Additionally, the low and varied response rates, ranging from 24.2 %–31.9 % between cohorts, posed challenges. Difficulty reaching interns in training hospitals may have contributed to this. Despite triangulating quantitative and qualitative data, these limitations persist. A new study is already underway to evaluate the long-term effects of the new curriculum. Furthermore, the integration of digital education into assessment structures could have been enhanced by incorporating it into daily clinical activities for more tangible student benefits. Lastly, there's a risk of overwhelming residents with excessive digital material, potentially leading to underutilization of the curriculum. Caution is warranted to prevent overload.

Integrating a structured digital curriculum to support clinical internships provides interns with comprehensive, readily accessible knowledge, refines their understanding of clinical topics, and results in feelings of empowerment. The combination of clinical and digital education ensures adequate exposure to subjects vital for future doctors, even if clinical exposure is limited. Thus, using a structured digital curriculum prepares both the intern and the internship program to adequately navigate future medical challenges.

Ethical statement

Not applicable.

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CRediT authorship contribution statement

Tim M. Feenstra: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. **Marianne C. Mak-van der Vossen:** Conceptualization, Supervision, Validation. **Melissa Montoya Buitrago:** Formal analysis, Investigation. **Danielle Sent:** Conceptualization, Methodology, Supervision, Validation. **Susanne van der Velde:** Conceptualization, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Writing – review & editing.

Declaration of competing interest

The authors declare no conflict of interest.

Appendix A. Survey

General characteristics and experiences

1. What is your Age?
2. What is your gender? (male, female, other)
3. What is your internship phase? (Preparatory phase, (post) clinical phase)

4. What is the location of your introductory weeks? (University Medical Centre (UMC), affiliated training hospital)
5. What is the location of your clinical weeks? (University Medical Centre (UMC), affiliated training hospital)
6. Are you interested in surgery as future specialty (yes/no)
7. What are your marks for the course? (scale of 1–10)
8. How much time did you use the course per week? (0–2 h, 2–5 h, 5–10 h, 10–20 h, >20 h)
9. Other internships should offer a digital curriculum such as the digital surgery curriculum (strongly disagree, disagree, neutral, agree, strongly agree)
10. What did you miss in the course? (open ended)

Design and structure

11. The digital curriculum offers clear instructions on how to use the digital curriculum (strongly disagree, disagree, neutral, agree, strongly agree)
12. The digital curriculum helps me prepare for the clinical component of my surgical internship (strongly disagree, disagree, neutral, agree, strongly agree)
13. The digital curriculum is constructed logically, and finding what you need is easy (strongly disagree, disagree, neutral, agree, strongly agree)
14. The digital curriculum helps structure skills and knowledge needed for the surgical internship (strongly disagree, disagree, neutral, agree, strongly agree)

Completeness and quality

15. The digital curriculum makes me aware of my level of knowledge and what I need to learn for the learning goals of the surgical internship (strongly disagree, disagree, neutral, agree, strongly agree)
16. The digital curriculum encourages me to study new clinical topics (strongly disagree, disagree, neutral, agree, strongly agree)
17. The digital curriculum provides me with useful feedback (strongly disagree, disagree, neutral, agree, strongly agree)
18. The digital curriculum provides me with well-timed feedback (strongly disagree, disagree, neutral, agree, strongly agree)
19. The digital curriculum makes me curious about the surgical clinic (strongly disagree, disagree, neutral, agree, strongly agree)
20. The digital curriculum arouses my interest to study the material further. (strongly disagree, disagree, neutral, agree, strongly agree)
21. I have used the digital curriculum to study clinical topics that I don't encounter in practice. (strongly disagree, disagree, neutral, agree, strongly agree)

Learning experiences

22. Learning through the digital curriculum was efficient (strongly disagree, disagree, neutral, agree, strongly agree)
23. I thought the most instructive module was: E-learnings, Vlogs, eBooks, Videos of suturing and knots, Videos of recorded lectures, Videos of preparatory week lectures, articles (strongly disagree, disagree, neutral, agree, strongly agree)
24. I would like to have more subjects within the module: E-learnings, Vlogs, eBooks, Videos of suturing and knots, Videos of recorded lectures, Videos of preparatory week, articles lectures (strongly disagree, disagree, neutral, agree, strongly agree)
25. I believe that this module provides me with relevant information for the learning goals of the surgical internship: E-learnings, Vlogs, eBooks, Videos of suturing and knots, Videos of recorded lectures, Videos of preparatory week lectures, articles (strongly disagree, disagree, neutral, agree, strongly agree)

26. I look for content outside of the course through sources such as (Google, surgeryassistant.nl, Touch Surgery, Wikipedia, YouTube, other)
27. Which components of the course did you use? (General principles, vascular surgery, oncological surgery, benign surgery, acute abdomen, abdominal wall, soft tissue infections, trauma surgery, endocrine surgery, urology, plastic surgery, orthopedic surgery, paediatric surgery, none, other)
28. The component for which I am seek material outside of the course is/are: (General principles, vascular surgery, oncological surgery, benign surgery, acute abdomen, abdominal wall, soft tissue infections, trauma surgery, endocrine surgery, urology, plastic surgery, orthopedic surgery, paediatric surgery, none, other)
29. Components that I do not encounter in practice and therefore the online Canvas course “Surgery” is/are for use: General principles, vascular surgery, oncological surgery, benign surgery, acute abdomen, abdominal wall, soft tissue infections, trauma surgery, endocrine surgery, urology, plastic surgery, orthopedic surgery, paediatric surgery, none, other.

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