SPECIAL SECTION: TEACHING IN HIGHER EDUCATION IN PANDEMIC TIMES

EMERGENCY REMOTE TEACHING IN A MEDICINE COURSE: AN ASSESSMENT OF TEACHING WORK FROM STUDENTS' PERSPECTIVE[1]

Rodolffo da Silva Fossa[2], André Campos Benedetti[3],
Patricia Elisa do Couto Chipoletti Esteves[4], Rinaldo Henrique Aguilar da Silva[5]

ABSTRACT

As has been the case in other face-to-face courses, the teaching methodologies of several medical training courses have been adapted due to the social isolation imposed by the SARS-CoV-2 pandemic. Thus, many higher education institutions started to adopt Emergency Remote Education (ERE) in order not to paralyze their academic activities. The objective of this work was to evaluate the implementation of the ERE in a Faculty of Medical Sciences located in São José dos Campos, São Paulo, Brazil, from the student perspective. The research is of a qualitative and quantitative nature, of the Case Study type. The analysis of the results demonstrated the adaptation and satisfaction of the students with the adopted didactic sequence, which alternated asynchronous and synchronous methodologies, especially the use of videos recorded by teachers. These results can provide data for studies that seek to investigate the impact of digital technologies on the training of higher education students; however, they should be considered from the context in which they were adopted.

Keywords: Emergency Remote Education. Medical education. Active teaching methodologies. Problem-Based Learning.

[1] A tradução deste artigo foi de responsabilidade dos autores.

[2] Faculdade de Ciências Médicas de São José dos Campos (HUMANITAS), São José dos Campos, SP, Brasil.
ORCID ID: https://orcid.org/0000-0001-9228-241X. Email: fossarodolffo@gmail.com.

[3] Faculdade de Ciências Médicas de São José dos Campos (HUMANITAS), São José dos Campos, SP, Brasil.
ORCID ID: https://orcid.org/0000-0003-2696-7351. Email: acbenedett@gmail.com.

[4] Faculdade de Ciências Médicas de São José dos Campos (HUMANITAS), São José dos Campos, SP, Brasil.Universidade Estadual de Campinas (Unicamp), Campinas, SP, Brasil.
ORCID ID: https://orcid.org/0000-0002-0954-8721. Email: patricia.esteves@humanitas.edu.br.

[5] Faculdade de Ciências Médicas de São José dos Campos (HUMANITAS), São José dos Campos, SP, Brasil.
ORCID ID: https://orcid.org/0000-0003-3197-3019. Email: rinaldo_henrique@uol.com.br.

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

ENSEÑANZA REMOTA DE EMERGENCIA EN LA CARRERA DE MEDICINA: EVALUACIÓN DEL TRABAJO DOCENTE DESDE LA PERSPECTIVA DISCENTE

RESUMEN

Como ha sucedido en otras carreras presenciales, las metodologías de enseñanza de varias carreras de formación médica se han adaptado debido al aislamiento social impuesto por la pandemia por SARS-CoV-2. Así, muchas instituciones de educación superior empezaran adoptar la Enseñanza Remota de Emergencia (ERE) a fin de que no se paralizasen sus actividades académicas. El objetivo de esto trabajo fue evaluar la implantación del ERE en una Facultad de Ciencias Médicas, en São José dos Campos, São Paulo, Brasil, desde la perspectiva del estudiante. La investigación es de carácter cualitativo y cuantitativo, del tipo Estudio de Caso. El análisis de los resultados mostró la satisfacción de los estudiantes con la secuencia didáctica adoptada, que alternó metodologías asincrónicas y sincrónicas, en particular el uso de videos grabados por los profesores. Estos resultados pueden dar pistas para estudios que busquen investigar el impacto de las tecnologías digitales en la formación de estudiantes de educación superior, sin embargo, deben ser considerados desde el contexto en el que fueron adoptadas.

Palabras clave: Enseñanza Remota de Emergencia. Educación médica. Metodologías activas de enseñanza. Aprendizaje Basado en Problemas.

ENSINO REMOTO EMERGENCIAL EM UM CURSO DEMEDICINA: AVALIAÇÃO DO TRABALHO DOCENTE NA PERSPECTIVADISCENTE

RESUMO

Como tem acontecido em outroscursos presenciais, as metodologias de ensino de diversos cursos de formação médica foram adaptadas em função do isolamento social imposto pela pandemia do SARS-CoV-2. Assim, muitas instituiçõesde ensino superior passaram a adotar o Ensino Remoto Emergencial (ERE) comointuito de não paralisar suas atividades acadêmicas. O objetivo deste trabalho foiavaliar a implantação do ERE em uma Faculdade de Ciências Médicaslocalizada em São José dos Campos, São Paulo, Brasil, a partir da perspectiva discente. A pesquisa é de natureza qualiquantitativa, do tipo Estudo de Caso. A análise dos resultados demonstrou a adaptaçãoe a satisfação dos estudantes com a sequência didática adotada, que alternou metodologias assíncronas e síncronas, em especial a utilização dos vídeos gravados pelos professores. Esses resultados podem fornecer dadosaos estudos que buscam investigar o impactodas tecnologias digitais na formação de alunos do ensino superior, porém devem ser considerados a partir do contexto em que foram adotados.

Palavras-chave: Ensino Remoto Emergencial. Educação médica. Metodologias ativas de ensino. Aprendizagem Baseada em Problemas.

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

INTRODUCTION

At the end of 2019, the world saw the arrival of the new coronavirus, called sars-cov-2, which, according to the world health organization (WHO), was responsible for affecting, so far, more than 37.7 million people, with more than 1.07 million deaths in 229 countries (WHO, 2020). In order to prevent the spread of the virus, several countries have adopted sanitary measures, such as isolating individuals with signs and symptoms and quarantining their peers; temporarily closing commercial establishments; canceling activities that generate crowds of people and adopting emergency remote education (KUCHARSKI *et al*., 2020).

According to muñoz (2020, p. 1), since the pandemic began, "about 1.5 billion students have been unable to attend school in more than 174 countries, according to a world bank report". Thus, among other, no less important impacts, the covid-19 pandemic presents itself as probably the greatest challenge that the educational system has experienced in current times (DANIEL, 2020).

Worldwide, many educational institutions have had to adopt Distance Learning (DE) methodologies for students (ATREYA; ACHARYA, 2020). Among the modalities adopted, one that has stood out during the pandemic is Emergency Remote Education (ERE), created in developed countries with the aim of maintaining school education and scientific research in times of wars, crises, catastrophes or pandemics (HODGES *et al*., 2020).

The difference between these two modalities is that in ERE the teaching activities are carried out using digital technological resources, predominantly synchronous, that is, the web conferences take place at the same times as the face-to-face classes, in a virtual environment, controlled by login and password created in videoconferencing platforms, such as Skype®, Meet®, Zoom®, or on social networks. According to Garcia *et al*. (2020), "teaching remotely is not synonymous with distance learning, although it is directly related to the use of technology and, in this case, digital". The success of this practice depends on the ability, familiarity and ability of the teachers to work with such tools, in order to capture and fix the student's attention, even in non-face-to-face settings.

In the case of distance education, the learning process also occurs through digital technologies, however, students and teachers are in different times and spaces (ZHU *et al*., 2020). In addition, teaching materials are prepared to reach a larger number of students; there is flexibility in time and space so that asynchronous activities can be carried out (MIAN; KHAN, 2020).

Emergency Remote Teaching in a Medicine course: an assessment of teaching work from students' perspective

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

Thus, the underlying discussion is how far from face-to-face teaching, structured and traditionally offered by medical schools, to a possible teaching and learning trend through remote resources. It is important to note that the change in this paradigm directly impacts the teacher's posture, who abandons the role of someone who teaches to assume the role of someone who facilitates learning (DAVIES *et al.*, 2020).

Given this scenario, researchers in the field of education have been interested in discussing the possible consequences and impacts of these changes (AHMED; ALLAF, 2020). Although it is premature to foresee consequences, these studies begin to provide data in light of the following questions: how and how much can the ERE contribute to the education of students in times of pandemic? What is the perception of students about the contribution of synchronous and asynchronous teaching methodologies for learning content and practices? How do students assess the adaptations made by the institution in teaching methodologies and assessment instruments?

Thus, the objective of this work was to evaluate the implementation of the ere in a college of medical sciences, from the student perspective, and to discuss how these results can contribute to the understanding of this new role of teaching in higher education based on the one who is submitted to the process, the student, and, also, ask how possible is it to learn in this new reality?

DEVELOPMENT OF EMERGENCY REMOTE TEACHING STRATEGIES

This research was developed at the Faculty of Medical Sciences of São José dos Campos - HUMANITAS, which has 403 students distributed in six academic periods. The institution adopts a hybrid teaching methodology, which means that the contents and practices are presented through Teaching Problems / Cases addressed by Problem Based Learning (PBL), centered on students, and through expository and interactive activities, teacher-centered. Before the pandemic, these methodologies were developed in different and alternating weeks, that is, during the academic semester, there were weeks for the PBL and weeks for the expository classes and laboratory practices.

With the suspension of academic activities due to the pandemic, the institution started to adopt synchronous and asynchronous teaching methodologies, developed through ERE. Each Problem / Case started to be presented in two successive weeks, as shown in Figures 1 and 2.

Emergency Remote Teaching in a Medicine course: an assessment of teaching work from students' perspective

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

WEEK 1 - ASYNCHRONOUS

Stage 1
- Send case/problem to group at the beginning of the week.

Stage 2
- In this stage the students individually complete the steps of PBL: 1 – reading of the problem/case; 2 – elucidation of terms or unknown vocabulary; 3 – Recognition and brief synthesis of problem/case; 4 – Brainstorming; 5 – Acknowledgement of gaps in knowledge e elaboration of learning objectives.

Stage 3
- Sharing the previous stage with group and tutor via manuscript.

Stage 4
- The tutor selects the learning objectives that are most pertinent to the topic and sends those to the group.

Stage 5
- Recorded classes are made available by the professors, using Prezi®.

Stage 6
- At the end of the week, students should send, in writing, their responses to the selected objectives and a synthesis of the whole process to the tutor and group.
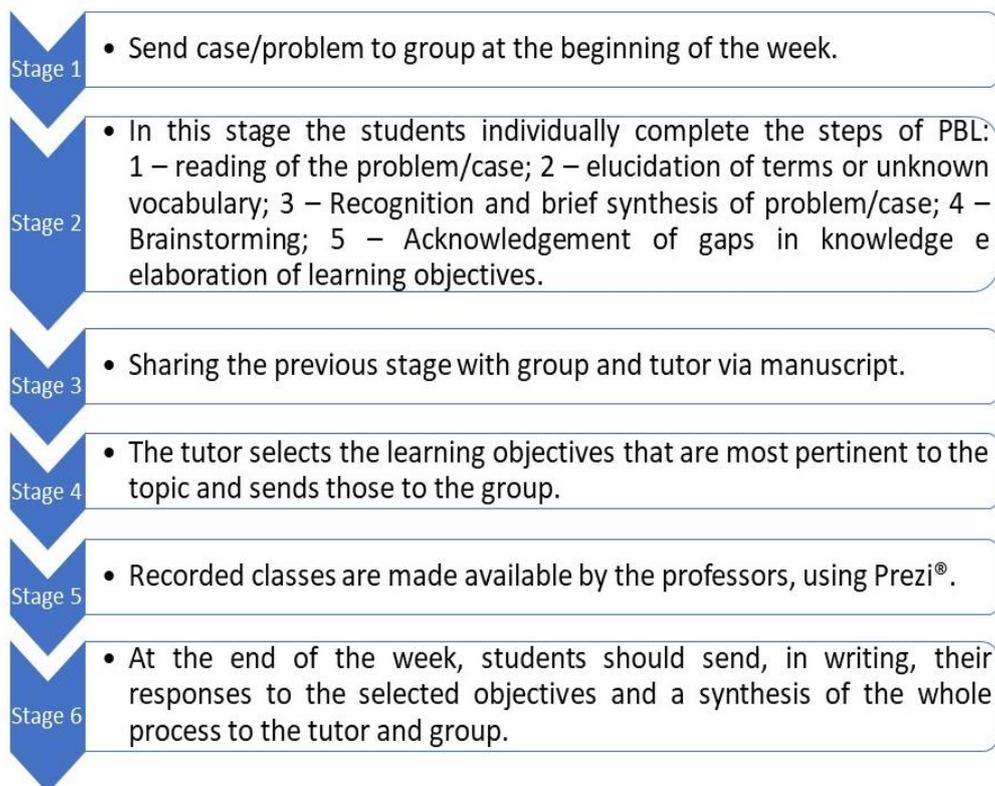
Figure 1 – Outline of the teaching steps in Week 1 - asynchronous
Source: prepared by the authors, 2020.

WEEK 2 - – SYNCHRONOUS

Wedconferences/Webclasses
- Moment when all students and professor are together, so that the content from week 1 can be examined more in-depth.
- These classes happen at the same time that the presencial class would have occurred.

Consultations:
- A learning resource available to the student which he can use at any time, for any number of reasons: the student can use it for academic orientation, to deepen his/her knowledge or clarify any doubts had regarding the content of the course.

Figure 2 – Plan for the teaching stages in Week 2 – synchronous
Source: prepared by the authors, 2020.

Emergency Remote Teaching in a Medicine course: an assessment of teaching work from students' perspective

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

In week 1, the content is developed asynchronously, through the Problem Based Assessment Exercise (EABP). For this purpose, tutoring groups with a maximum of 12 students and a tutor (teacher) are established. Thus, at the beginning of this week, each tutor sends a problem / case to his group of students. This teaching methodology is a variation of the PBL, and the fundamental difference between them is that, in the case of the EABP, the student performs individually and in writing all the steps provided for the PBL: 1. Reading the Problem / Case; 2. Elucidation of unknown terms or words; 3. Recognition and brief synthesis of the Problem / Case; 4. Brainstorming; 5. Recognition of knowledge gaps and development of learning objectives. After recording the information, each student shares the results of their studies with their respective group and with the tutor, who selects, among the learning objectives sent by the students, about ten. The objectives selected by the tutor are sent to the students to be researched and answered. As support for Week 1, students receive videos of 20 to 30 minutes in length - from each area of knowledge (discipline). These videos are recorded in advance by teachers on the Prezi® platform and aim to serve as cognitive support for the construction of knowledge.

In Week 2, the methodology is established by a synchronous method: the teachers of each area of knowledge (discipline) deepen the contents of the respective Problems / Cases from the previous week, using, for this, web classes and web conferences in virtual rooms, through Zoom ®, with the presence of all students simultaneously. These meetings take place with the video cameras and audios on and have an average of two hours per discipline.

The two-week activities also include the possibility of individual or group consultations (synchronous process). A consultation is a learning resource made available to the student and that can be activated at any time and has several objectives: the student can use it to obtain study guidance, deepen knowledge or resolve doubts regarding the contents already worked in each area of knowledge (discipline), and, thus, overcome possible barriers that may hinder the improvement of knowledge and learning (ANJOS, 2017).

After eight weeks of studying four Problems / Cases per period, students are individually assessed through the Cognitive Assessment Exercise (EAC), a formative, criterion-referenced assessment tool, designed according to the degree of complexity and autonomy of the students of each period. This assessment contains three open questions, whose commands (objectives) use Bloom's taxonomy (FERRAZ; BELHOT, 2010): the first learning objective is a high taxonomy of the cognitive domain (application of knowledge), with fifteen lines for the answer; the second is of medium taxonomy (analysis and synthesis), with eight to ten lines for the answer; and finally, the third objective is of low taxonomy (memory), with two or three lines for the answer. The contexts of these objectives address the development of professional competence, basic-clinical integration and biological, pathological,

Emergency Remote Teaching in a Medicine course: an assessment of teaching work from students' perspective

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

psychological and social aspects. After the evaluation, on the same day students receive the feedback for each learning objective.

After the completion of the EAC, the feedback occurs, when the teacher, through the Zoom® platform, discusses with each period their respective answers and clarifies doubts. This action is a continuation of the teaching and learning process, as possible difficulties may be related to a lack of understanding of the context and / or the command of one or more objectives (commands). Thus, the teacher, when reading and discussing each of them, revisits the content and allows students to appropriate the process of interpreting and writing responses (TONHOM, 2015).

METODOLOGY

This research was configured as quantitative through the analysis of the frequency of responses and qualitative, such as Case Study (BARDIN, 2011; MINAYO, 2011), approved by the ethics and research committee under number 75157617.30000.5103. The study was conducted at the Faculty of Medical Sciences of São José dos Campos - HUMANITAS, a private higher education institution that currently has 403 enrolled students. These students were invited to answer an online semi-structured questionnaire (LAVILLE; DIONNE, 1999), prepared by the institution's Evaluation Center and sent through Google Forms®, containing 33 questions, six of which were open questions, the answers to which were optional, and 27 closed and mandatory questions. Data collection took place over ten days, from June 1st to the 10th, 2020.

Among the 27 closed questions, 26 contained three alternatives: I completely agree; partially agree and disagree. These questions were organized into seven major themes: (i) seven questions on the Problem Based Assessment Exercise (EABP), six of which are closed and one open: "if you wish, comment on the EABP"; (ii) six questions about the videos recorded using Prezi®, five of which are closed and one open: "if you wish, comment on the recorded videos"; (iii) four questions about the Cognitive Assessment Exercise (EAC), three of which are closed and one open: "if you wish, comment on the EAC"; (iv) five questions about the Consultancies, four closed and one open: "if you wish, comment on the Consultations"; (v) seven questions about the video classes, six of which are closed and one open: "if you wish, comment on the video classes"; (vi) two questions about the didactic sequence adopted in the ERE, one closed and one open: "if you wish, comment on the didactic sequence"; (vii) a closed question about psychopedagogical support. In addition to these questions, there was one to characterize the student for their respective course period.

Emergency Remote Teaching in a Medicine course: an assessment of teaching work from students' perspective

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

Answers to closed questions were tabulated by Google Forms® itself in the form of Excel® graphs and responses to open questions were analyzed using Content Analysis, more specifically Thematic Analysis (BARDIN, 2011; MINAYO, 2011).

For the analysis of open questions, a fluctuating reading was initially carried out (BARDIN, 2011) of the 369 comments. Then, the students' speeches were codified in six thematic units (analytical categories) and quantified: 1. The contribution of the EABP; 2. The contribution of recorded videos; 3. The contribution of video classes; 4. The didactic sequence; 5. The EAC as an assessment tool; and 6. The contribution of consultancies. After the inference, the results were interpreted and triangulated with those of the quantitative analysis, seeking to verify and analyze possible relationships between both.

RESULTS AND DISCUSSION

The data obtained showed that of the 403 students enrolled, 269 (66.75%) responded to the survey, 63 (23.42%) of the 1st period; 41 (15.24%) of the 2nd period; 39 (14.5%) from the 3rd period; 16 (5.94%) from the 4th period; 32 (11.9%) of the 5th period; and 78 (29%) from the 6th period.

Next, the quantitative (closed questions) and qualitative (open questions) results will be presented. For the presentation and discussion of the qualitative results, it is important to inform that the students' comments were identified by means of a code containing capital letters preceded by numbers from 1 to 269. The numbers represent each of the 269 students, while the letters represent the themes addressed. So, for example: 68EABP (student 68; EABP theme); 58VG (student 58; recorded video theme); 7EAC (student 7; EAC theme); 13C (student 13; Consultancy theme); 8VA (student 8; video lesson theme); 32SD (student 32; Didactic Sequence theme).

Regarding qualitative data, of the 269 students who participated in the survey, there were 369 comments to the open questions, as specified in Table 1.

Emergency Remote Teaching in a Medicine course: an assessment of teaching work from students' perspective

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

Themes of the Open Questions	Frequency of Comments
Contribution of EABP	92 (25.0%)
Contribution of Recorded Videos	70 (19.0%)
Contribution of EAC	45 (12.2%)
Contribution of consultations	41 (11.1%)
Contribution of videoclasses	71 (19.2%)
Contribution of didactic sequence	50 (13.5%)
Total	369 (100%)

Tabela 1 – Frequency of comments to open questions
Source: prepared by authors, 2020

Regarding the EABP's contribution to learning the stages of the investigative process and learning the contents of the various areas of knowledge, most students considered that this methodology contributes to these processes. (Table 2)

Options	The Contribution of the EABP	
	to the learning of the investigative process	to the learning of contente from a variety of áreas of knowledge
Completely agree	187 (69.5%)	151 (56%)
Partially agree	77 (28.6%)	102 (38%)
Disagree	5 (1.9%)	16 (6%)
Total Responses	269 (100%)	269 (100%)

Table 2 – Frequency of responses to the theme Contribution of the EABP
Source: prepared by authors, 2020

These results demonstrate that students are satisfied with the possibility of learning through a teaching methodology in which they are the protagonists of the learning itself; but, comparing only the option "I completely agree", it was possible to verify that the students consider the contribution of the EABP more relevant to learning the investigative process than to learning the contents of the various areas of knowledge. This result undoubtedly reflects the main objective of this methodology, since, considering that the EABP refers to a structuring of the PBL in writing, the contribution of this methodology to the training of professionals qualified to elaborate hypotheses, investigate and do diagnosis. According to Passos and Higa (2019), this methodology stands out "in medical education because it is a proposal based on constructivism, with the purpose of developing the student's autonomy and critical reasoning for decision making" (PASSOS; HIGA, 2019, p. 323). For Silva et al. (2019), the PBL steps approach gives the educational process the ability to integrate the student's reality into their education and thus, if these steps are well directed, they can contribute to develop the students' autonomy, making them potential researchers.

Emergency Remote Teaching in a Medicine course: an assessment of teaching work from students' perspective
Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

The qualitative analysis of the EABP contribution theme showed that for 32 (34.78%) students, the EABP contributes to the learning of cognitive contents, while 10 (10.86%) stated that it does not. On this topic, one of the comments was:

> *"The high point of carrying out the whole process, in my opinion, is investing in this characteristic of investigation, carrying out the formulation of objectives and hypothesis alone. In addition, the zoom lessons in the following week are proving essential for the conclusion of the understanding of the case. Congratulations on the organization and dedication in producing all content for us students. Thanks!"* (68EABP).

On the other hand, another student commented:

> *"Due to the circumstances, EABP has been a learning alternative, however, for some students adaptation has a certain degree of difficulty, which leads to a drop in student performance [...]"* (70EABP).

Student 70EABP emphasizes the issue of adaptation in the face of changes made from the suspension of face-to-face classes and the consequent implementation of the ERE. In fact, in the case of school processes and routines, adaptation is an important factor for effective learning and requires continuous planning, monitoring and evaluation. In the case of the experience adopted by HUMANITAS, students had little time to become familiar with the new methods, since the pandemic imposed the need to take urgent actions, in order to avoid the discontinuity of teaching. It is also necessary to consider factors that are no less relevant and have already been indicated in studies that deal with active learning methodologies, as highlighted by Torres *et al*. (2019), so that the discomfort felt by students when experiencing the transition of methodologies traditional to active ones can be caused by the breaking of paradigms or failures in the execution of these methods. According to these authors:

> The students' view of this type of learning is positive, but contradictory, which translates, on the one hand, the anguish of a paradigmatic transition, but, on the other hand, alerts to the possibility of mistakes in the execution of tutorial steps (TORRES *et al*., 2019, p. 1).

Regarding the recorded videos theme, it was possible to see great satisfaction from the students in relation to the resource itself, as well as in the didactics used by the teachers and, finally, in relation to the period in which they were made available (Week 1). These results are shown in Table 3.

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

Options	Contribution of Recorded Videos		
	For the learning of content from various areas of knowledge	Didactics of Professors	Period made available
Completely Agree	194 (72.1%)	186 (69.15%)	229 (85.13%)
Partially Agree	71 (26.4%)	78 (29%)	38 (14.12%)
Disagree	4 (1.5%)	5 (1.85%)	2 (0.75%)
Total responses	269 (100%)	269 (100%)	269 (100%)

Table 3 – Frequency of responses for the theme of Contribution of Recorded Videos.
Source: prepared by authors, 2020.

The results above are especially interesting and deserve to be investigated further, since, at first place, it is possible to assume that the didactics of teachers would not be considered adequate by students, since most teachers were not familiar with the technology involved in the preparation of these materials. In addition, as can be seen through qualitative analysis (shown below), for several students, including 58VG, "[...] some teachers explain it better by video than live in class". Other discussions about these results are more useful if combined with the presentation of student comments, which will be done below.

Among the students who made comments on the Contribution of Recorded Videos, thirty (43%) considered that this resource contributes to the learning of the contents and, in this sense, the comments of six students, in addition to showing the relevance of the resource, demonstrate that, for them, videos are more beneficial than face-to-face meetings:

> "The recorded videos are didactic. Some teachers even explain it better by video than live in class. I believe that, due to the subject, it yields more, and there are no interruptions from students during the class" (58VG).

> "In my opinion, the didactics of the distance classes have been excellent and, often, more profitable than the live stations, since, in most cases, the line of reasoning became clearer" (60VG).

> "The direction the videos have given us has been very cool. As it is video, I believe that they do it directly and objectively and, with that, it directs us towards the paths that we must follow. I have enjoyed it very much. They are short, direct and objective videos" (63VG).

> "It's been great to receive the videos. Some teachers are even more objective in the videos than when the station was in person. This helps a lot!" (112VG).

> "They were the best classes we have ever had, they (teachers) are very committed and with a teaching style never seen before" (144VG).

Emergency Remote Teaching in a Medicine course: an assessment of teaching work from students' perspective

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

> *"The videos sent by the teachers are very didactic and add a lot to the research during the EABP week. All teachers are to be congratulated"* (146VG).

As previously discussed, there was approval from students to the didactics of teachers in the recorded videos. Among the 70 comments on this topic, 14 students (20%) addressed the didactics of teachers as a relevant element and, in these comments, it was found that, for students, this didactic is associated with the focus and objectivity of teachers.

Still, in relation to the subject of the recorded videos, the qualitative analysis showed that the students compared this resource with the face-to-face classes; that is, for them, in some way, there is a close relationship between the videos and the classes and / or face-to-face meetings. Therefore, these ways of delivering the content were listed. In this sense, the 144VG student's comment is very significant: "They were the best classes we've ever had …".

On the other hand, it should be noted that the use of recorded video is not a novel technology. On the contrary, it has long been used as a teaching strategy. Moran (1995, p. 1) states that "video, in the students' minds, means rest and not class, which changes the posture, the expectations regarding its use". On how to deal with this idea of the video, Moran (1995, p. 1) adds that "we need to take advantage of this positive expectation to attract the student to the subjects of our pedagogical planning. But, at the same time, to know that we need to pay attention to establish new bridges between video and the other dynamics of the class".

Regarding classes or conferences (video classes), a synchronous process that takes place in the week following the EABP, the results demonstrate that students approved of both their contribution to the learning of cognitive content and the didactics of teachers in these meetings (Table 4).

Options	Contribution of Video Classes	
	Learning contente from diverse areas of knowledge	The didactics of the professors
Completely Agree	181 (67.3%)	190 (70.6%)
Partially Agree	77 (28.6%)	76 (28.3%)
Disagree	11 (4.1%)	3 (1.1%)
Total responses	269 (100%)	269 (100%)

Table 4 – Frequency of responses for the theme of Contribution of Videoclasses
Source: elaborated by authors 2020.

Emergency Remote Teaching in a Medicine course: an assessment of teaching work from students' perspective

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

Still in relation to the contribution of the video classes, the thematic analysis showed that for 25 (35.21%) students, of the 71 who commented on this topic, this resource is suitable for learning cognitive content.

Among the resources made available through ERE, video classes are the ones that most resemble face-to-face classes, as it is a synchronous process, in which the teacher develops the content and interacts with students more freely, using a video camera and audio. In addition, the duration of these meetings is close to that of the face-to-face classes. These elements - duration, greater freedom of the teacher and possibility of interaction - can be interrelated and, perhaps explain the fact that they were mentioned in the responses of several students.

> *"The video classes have been very good, very enlightening, it is possible to ask questions and interact with the teacher, which is great [...]"* (15VA).

> *"The video classes seem to be more productive than the classroom. There are no major distractions and it seems that teachers prepare more complete materials, which contributes to the class being more productive"* (18VA).

> *"The video classes have complemented my study and cleared up a lot of doubts, I really like being live and being able to clear up my doubts right away"* (135VA).

> *"It is a little more difficult to maintain concentration in video classes ... some content is too long and ends up dispersing our concentration more quickly"* (200VA).

When comparing only the option "I completely agree" for the questions on the three themes - contribution of the EABP, of the recorded videos and of the video lessons for learning the contents of the different areas of knowledge - it was possible to verify that the students consider the contributions of the recorded videos and of video lessons more significant than that of EABP. Comparing the three resources, it is interesting to note that the recorded videos have the highest approval rate and the lowest failure rate, in addition to being an asynchronous process (Table 5).

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

Contribution of EABP, recorded videos and vídeo classes for the learning of content from diverse areas of knowledge			
Themes	Total Responses	Options	
		Complete Agree	Disagree
Contribution of EABP	269	102 (38%)	16 (6%)
Contribution of Recorded Videos		194 (72.1%)	4 (1.5%)
Contribution of vídeo classes		181 (67.3%)	11 (4.1%)

Table 5 – Frequency of responses about the Contribution of EABP, Contribution of Recorded Videos and vídeo classes.
Source: prepared by authors, 2020.

Regarding these results, it should also be noted that the links to the recorded videos are made available to students in the same week in which the EABP takes place (Week 1). Thus, it would be possible to question whether the greater approval of students for the use of videos would be related to the fact that they are offered as support (Cognitive Support Station) to the EABP. If, in fact, the students' opinions were influenced by the strategy adopted by the institution, these two resources could be analyzed together and not in isolation.

As shown by the quantitative analysis (Table 5), the qualitative analysis (Table 6) showed that the recorded videos are the resource that obtained the most approval from the students.

Contribution of EABP, recorded videos and video classes for the learning of content from diverse areas of knowledge			
Themes	Total Comments	Thematic Analysis	
		Agree	Disagree
Contribution of EABP	92	32 (35%)	10 (11%)
Contribution of recorded videos.	70	30 (43%)	4 (5.7%)
Contribution of video classes.	71	25 (35.2%)	15 (21.1%)

Table 6 – Frequency of comments about the Contribution of EABP, recorded videos and video classes.
Source: prepared by authors, 2020.

The analysis of Table 6 also indicates that there was no significant difference between the approval of the EABP and the video classes. On the other hand, in relation to the discordant

Emergency Remote Teaching in a Medicine course: an assessment of teaching work from students' perspective

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

comments, it was possible to verify that there was a greater disapproval of the video classes than the EABP.

The triangulation of the quantitative and qualitative results allowed inference that (Tables 5 and 6) among the three resources made available - EABP, recorded videos and video lessons -, there was greater approval for the recorded videos, followed by the EABP and the video lessons. It is important to consider, however, that these resources were made available to students from a didactic context, strategically planned to be developed in two successive weeks (Week 1 and 2) and, perhaps for this reason, it is inappropriate to take any of these results in isolation. So, for example, one can ask: would the recorded videos have received the same approval if they were made available in Week 2, after the video lessons? This discussion refers to the theme of the didactic sequence, whose results will be presented below: 183 (68%) students totally agreed with the adopted didactic sequence, 71 (26.4%) partially agreed, while 15 (5.6%) disagreed. This perception of integration of synchronous and asynchronous processes was reported by Amarilla-Filho (2011). This author states that:

> Distance strategies require a pedagogy that is not just seduced by the technical approach, but also has a concern with methodological and didactic relationships.That the use of virtual environments requires an understanding that the communicative, temporal and spatial elements are asynchronous and, therefore, require the design of methodologies and didactics that guide the student towards autonomy, self-discipline and self-teaching, as well as, for the teacher, the perception of a significant change in the way they understand their role (p. 48).

The entire teaching-learning process was complemented by the provision of consultancies, and so, in relation to the statement, "I have carried out several consultancies during this period when academic activities are being carried out at a distance", 45 (16.73%) totally agreed, 97 (36.06%) partially agreed and 127 (47.21%) students disagreed. This result was, in a way, unexpected, as this resource already existed before the suspension of classes and was widely used by students. It was expected that, with the implementation of the ERE, students would try to access this resource more frequently, since the contents started to be delivered remotely, however, this was not what happened and, in this work, it was not possible to know why 47.21% of the students did not make use of the Consultation.

Finally, regarding the EAC, the majority of students, 211 (78.4%) of them, consider that the institution was correct when sending this assessment instrument to be carried out in writing. Furthermore, as for the test format, that is, maintaining the characteristics of the face-to-face evaluation: high, medium and low taxonomy issues. Of the 269 students, 241 (89.59%) agreed with the EAC format. The thematic analysis corroborated the quantitative results,

Emergency Remote Teaching in a Medicine course: an assessment of teaching work from students' perspective

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

because of the 45 students who commented on this topic, 25 (55.55%) stated that, in fact, this instrument was adequate, as highlighted in the comments below:

"I realized that with EAC I was able to learn a lot more and that most questions required more reasoning than memorizing concepts. That was a very positive point!" (21EAC).

"I found the decision to be very assertive. For the questions, despite being at home, with possible "consultation", were well elaborated questions, which are not found in a 'simple Google search'" (63EAC).

"I believe that EAC requires more responsibility on the part of students, which is great for personal and professional growth" (84EAC).

"I found EAC extremely satisfactory, I was able to learn a lot during it, and it exceeded my expectations" (117EAC).

"The process, in addition to evaluating, helps to understand how evaluation strategies work. It also helps with what needs to be deepened" (126EAC).

"I thought EAC was important, as I was able to check my learning. Despite being online and even with some consultation, it was necessary to know the material in order to formulate the answers" (135EAC).

The comments of these students emphasize the intentionality contained in the EAC, that is, an instrument of dissertative evaluation, referenced criterion, whose objectives (commands) are formulated using Bloom's taxonomy (FERRAZ; BELHOT, 2010). Thus, when the student affirms that the questions demand more reasoning than memorization, or that "[...] it was necessary to know the subject in order to formulate the answers", what stands out is that, even though it is done remotely and without supervision, it was necessary to know the content to meet the feedback. In this sense, the comment of one of the students was revealing: "The process, in addition to evaluating, helps to understand the functioning of the evaluation strategies [...]". That is, the student was able to grasp the strategy contained in the assessment instrument. On the other hand, for 9 (20%) students the EAC was not adequate and, according to three of them:

"I believe that the EAC could be like the normal assessment, 6 questions, with adequate time and within the content" (54EAC).

"The number of questions is insufficient to cover all the content" (80EAC).

"Regarding the number of questions in the EAC, I think it little compared to what we had in the face-to-face test" (82EAC).

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

It is interesting to note in these comments that, for these students, it is not the format of the assessment that is inappropriate, but the number of questions. This reaction happened because, in person, this assessment is composed of six questions, in contrast to the format adopted in the ERE, with three questions. Perhaps, and this was not possible to investigate, the number of questions and not the degree of complexity underlies the students' criticism. Due to the limits of this text, it will not be possible to extend information and discussions, but with the adoption of the ERE, another evaluation that was previously optional became mandatory. This was part of the evaluation strategy, which also needed to be adapted to the new format. In addition, feedback was used to minimize this discomfort since the teacher had the opportunity to clarify the taxonomy used and discuss the expected answers (feedback). According to DOLMANS (2003),

> Student feedback should address aspects related to achieving the objectives, concepts, content and difficulties experienced by the student during the learning process. This process influences the integration of theory and practice, teaching resources and the teacher's experience and receptivity to receive criticism and praise, as well as providing them to students in a technical, considerate, productive and timely manner (p. 1129).

FINAL CONSIDERATIONS

With the suspension of on-site academic activities, HUMANITAS adopted ERE through teaching processes involving EABP, recorded videos, video lessons, EAC and online consultancy. These processes started to compose two sequential educational moments, the first being asynchronous and the second synchronous (weeks 1 and 2, respectively). In this work, the students' opinions about these educational resources and methodologies were investigated and the analysis of the results showed that the students approved of the adaptations made, and the recorded videos (Cognitive Support Station) were the ones that received the most approvals. Although the preference for recorded videos was demonstrated through qualitative and quantitative analysis, these resources were adopted as part of a broad strategic context, which prevents them from being evaluated in isolation. In addition, attention was drawn to the adaptation of students to teaching strategies implemented during social isolation; strategies that, even though they may be familiar to many students, because they use digital technologies, are not part of traditional medical education. It is worth noting, in this sense, that for some years in the country, the medical schools have been changing their curricular structures linked to international training movements.

Emergency Remote Teaching in a Medicine course: an assessment of teaching work from students' perspective

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

Finally, it is important to note that the results of this research can provide data for studies that seek to investigate the impact of digital technologies on the training of students of higher education, particularly those in the health field.

REFERÊNCIAS

AHMED, H.; ALLAF, M.; ELGHAZALY, H. COVID-19 and medical education. *The Lancet Infectious Diseases*, [S.L.], v. 20, n. 7, p. 777-778, jul. 2020. Elsevier BV. Disponível em: https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30226-7/fulltext. Acesso em: 9 ago. 2020. DOI: http://dx.doi.org/10.1016/s1473-3099(20)30226-7.

ANJOS, D. R. L; AGUILAR-DA-SILVA, R.H. Questionário de vivências acadêmicas (QVA-R): avaliação de estudantes de medicina em um curso com currículo inovador. *Avaliação (Campinas)* [on-line], v. 22, n. 1, p. 105-123, 2017. Disponível em: https://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-40772017000100105&lng=pt&tlng=pt. Acesso em: 19 ago. 2020. DOI: https://doi.org/10.1590/s1414-40772017000100006.

AMARILLA-FILHO, P. Educação a distância: uma abordagem metodológica e didática a partir dos ambientes virtuais. *Educ. Rev.*, Belo Horizonte, v. 27, n. 2, p. 41-72, ago. 2011. https://doi.org/10.1590/S0102-46982011000200004. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102-46982011000200004&lng=en&nrm=iso. Acesso em: 19 ago. 2020. DOI: https://doi.org/10.1590/S0102-46982011000200004.

ATREYA, A.; ACHARYA, J. Distant virtual medical education during COVID-19: half a loaf of bread. *The Clinical Teacher*, [s.l.], p. 1-2, 18 jun. 2020. Wiley. Disponível em: https://pubmed.ncbi.nlm.nih.gov/32558269/. Acesso em: 19 jul. 2020. DOI: http://dx.doi.org/10.1111/tct.13185.

BARDIN, L. *Análise de Conteúdo*. Lisboa, Portugal: Edições 70, 2011.

DANIEL, J. Education and the COVID-19 pandemic. *Prospects*, [s.l.], p. 1-6, 20 abr. 2020. Springer Science and Business Media LLC. Disponível em: https://link.springer.com/content/pdf/10.1007/s11125-020-09464-3.pdf. Acesso em: 19 jul. 2020. DOI: http://dx.doi.org/10.1007/s11125-020-09464-3.

DAVIES, N. G. *et al*. Effects of non-pharmaceutical interventions on COVID-19 cases, deaths, and demand for hospital services in the UK: a modelling study. *The Lancet Public Health*, [s.l.], v. 5, n. 7, p. 375-385, 2 jun. 2020. Semanal. Elsevier BV. Disponível em: https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(20)30133-X/fulltext. Acesso em: 19 jul. 2020. DOI: http://dx.doi.org/10.1016/s2468-2667(20)30133-x.

Emergency Remote Teaching in a Medicine course: an assessment of teaching work from students' perspective

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

DOLMANS, D. The effectiveness of PBL: the debate continues. Some concerns about the BEME movement. *Med. Educ.*, v. 37, n. 12: p. 1129-1130, 2003. Disponível em: https://pubmed.ncbi.nlm.nih.gov/14984122/. Acesso em: 19 ago. 2020. DOI: https://doi.org/10.1046/j.1365-2923.2003.01724.x.

FERRAZ, A. P. C. M; BELHOT, R. V. Taxonomia de Bloom: revisão teórica e apresentação das adequações do instrumento para definição de objetivos instrucionais. *Gest. Prod.*, São Carlos, v. 17, n. 2, p. 421-431, 2010. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-530X2010000200015&lng=en&nrm=iso. Acesso em: 8 ago. 2020. DOI: https://doi.org/10.1590/S0104-530X2010000200015.

GARCIA, T. C. M. *et al*. *Ensino Remoto Emergencial*: proposta de design para organização de aulas. Proposta de design para organização de aulas. Natal: NSEDIS/UFNR, 2020. p. 1-17. (Cadernos de Ensino Mediado Por TIC.) Disponível em: https://repositorio.ufrn.br/bitstream/123456789/29767/1/ENSINO%20REMOTO%20EMERGENCIAL_proposta_de_design_organizacao_aulas.pdf. Acesso em: 7 out. 2020.

HODGES, C. *et al*. The difference Between emergency remote teaching and online learning. *Educause Review*, [s.l.], 2020. Disponível em: https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning#fn1 . Acesso em: 19 jul. de 2020.

KUCHARSKI, A. J. *et al*. Effectiveness of isolation, testing, contact tracing, and physical distancing on reducing transmission of SARS-CoV-2 in different settings: a mathematical modelling study. *The Lancet Infectious Diseases*, [s.l.], p. 1-10, 16 jun. 2020. Infectious Diseases. Elsevier BV. Disponível em: https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30457-6/fulltext. Acesso em: 19 jul. 2020. DOI: http://dx.doi.org/10.1016/s1473-3099(20)30457-6.

LAVILLE, C.; DIONNE J. *A construção do saber*: manual de metodologia da pesquisa em ciências humanas. Belo Horizonte: Ed. da UFMG, 1999.

MIAN, A.; KHAN, S. Medical education during pandemics: a UK perspective. *BMC Med*. v. 18, n. 100, 2020. Disponível em: https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-020-01577-y. Acesso em: 19 ago. 2020. DOI: https://doi.org/10.1186/s12916-020-01577-y.

MINAYO, M. C. S. O desafio da pesquisa social. *In*: MINAYO, M. C. S. (org.). *Pesquisa Social*: teoria, método e criatividade. 30. ed. Petrópolis: Editora Vozes, 2011.

MORAN, J. M. O vídeo na sala de aula. *Revista Comunicação & Educação*, São Paulo, ECA-Ed. Moderna, v .2: 27 a 35, jan./abr. 1995. Disponível em: http://www.eca.usp.br/prof/moran/site/textos/desafios_pessoais/vidsal.pdf Acesso em: 19 ago. 2020.

Emergency Remote Teaching in a Medicine course: an assessment of teaching work from students' perspective

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

MUÑOZ, R. A experiência internacional com os impactos da COVID-19 na educação. *Nações Unidas Brasil*, 8 abril 2020. Disponível em: https://nacoesunidas.org/artigo-a-experiencia-internacional-com-os-impactos-da-covid-19-na-educacao/. Acesso em: 19 ago. 2020.

PASSOS, A. H. R; HIGA, E. F. R. Aprendizagem Baseada em Problemas: contribuição para médicos pediatras. *Rev. bras. educ. med.*, Brasília, v. 43, n. 1, supl. 1, p. 322-329, 2019. Disponível em: https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-55022019000500322&tlng=pt. Acesso em: 19 ago. 2020. DOI: http://dx.doi.org/10.1590/1981-5271v43suplemento1-20180191.

SILVA *et al*. A abordagem PBL (Problem Based Learning) em um curso técnico em enfermagem: elementos autobiográficos da prática docente em anatomia humana. *Revista Pesquisa Qualitativa*, São Paulo, v.7, n.15, p. 447-450, 2019. Disponível em: https://editora.sepq.org.br/rpq/article/view/256/169. Acesso em: 16 dez 2020. DOI: https://doi.org/10.33361/RPQ.2019.v.7.n.15.256.

TONHOM, S. F. R. *et al*. *Caderno de avaliação*. Cursos de Medicina e Enfermagem: Secretaria de Ensino Superior – Faculdade de Medicina de Marília (FAMEMA). 1. ed. rev. Marília/SP: Biblioteca da Faculdade de Medicina de Marília, v. 1, 2015. 49 p. Disponível em: https://www.famema.br/institucional/avaliacao/docs/CADERNO%20DE%20AVALIACAO%20 2017_Altera%C3%A7%C3%A3o%20CADE_Final.pdf. Acesso em: 20 jul. 2020.

TORRES, V. *et al*. Ingressantes de cursos médicos e a percepção sobre a transição para uma aprendizagem ativa. *Interface*, Botucatu, v. 23, 2019. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414328320190001 00203&lng=en&nrm=iso. Acesso em: 19 ago. 2020. DOI: https://doi.org/10.1590/interface.170471.

WHO – WORLD HEALTH ORGANIZATION. *Coronavirus Disease (COVID-19)*. Dashboard. 2020. Disponível em: https://covid19.who.int. Acesso em: 19 jul. 2020.

ZHU, N. *et al*. A novel coronavirus from patients with pneumonia in China, 2019. *The New England Journal of Medicine: Brief Report*, Pequim, v. 382, n. 8, p. 728-733, 20 fev. 2020. Mensal. Disponível em: https://www.nejm.org/doi/pdf/10.1056/NEJMoa2001017?articleTools=true. Acesso em: 19 jul. 2020. DOI: 10.1056/NEJMoa2001017.

Emergency Remote Teaching in a Medicine course: an assessment of teaching work from students' perspective

Rodolffo da Silva Fossa, André Campos Benedetti,
Patrícia Elisa do Couto Chipoletti Esteves, Rinaldo Henrique Aguilar da Silva

Rodolffo da Silva Fossa
Acadêmico de medicina na Faculdade de Ciências Médicas de São José dos Campos – HUMANITAS.
fossarodolffo@gmail.com

André Campos Benedetti
Acadêmico de Medicina na Faculdade de Ciências Médicas de São José dos Campos – HUMANITAS.
acbenedett@gmail.com

Patricia Elisa do Couto Chipoletti Esteves
Doutora em Ensino de Ciências e Matemática – UNICAMP. Possui mestrado em Ciências pela Universidade do Vale do Paraíba – UNIVAP. Possui Licenciatura em Ciência e Graduação em Ciências Biológicas pela Universidade de Taubaté – UNITAU. Professora e Coordenadora do Núcleo de Avaliação da FCMSJC-HUMANITAS. Professora colaboradora no Departamento de Geologia e Recursos Naturais do Instituto de Geociências da Universidade Estadual de Campinas – UNICAMP.
patricia.esteves@humanitas.edu.br

Rinaldo Henrique Aguilar da Silva
Pós-Doutor em Ensino em Saúde pelo Centro de Desenvolvimento do Ensino Superior em Saúde (CEDESS-UNIFESP). Doutorado em Genética Médica pela Universidade Federal de São Carlos. Mestrado em Genética Médica pela Universidade Federal de São Carlos. Docente do curso de Medicina e Enfermagem da FAMEMA. Diretor de Ensino, Pesquisa e Extensão na FCMSJC-HUMANITAS.
rinaldo_henrique@uol.com.br