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Dirisana+

Report for Curriculum Development

Erasmus+ Capacity Building in Higher Education

Project no: 618489-EPP-1-2020-1-ZA-EPPKA2-CBHE-JP

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Co-funded by the
Erasmus+ Programme
of the European Union

Scope

The Curriculum Sub-Committee forms part of the Dirisana+ consortium with the explicit goal of improving the curricula of healthcare sciences programmes. This, in itself, creates a broad scope of investigation for the consortium as a whole requiring a flexible approach to meet the needs of the consortium's diverse projects and outcomes.

As posited by Desai (2009) and Thomas *et al*. (2016), the curriculum is "a planned educational experience" which considers all factors that influence, contribute, advise and results in an educational outcomes being reached (Desai, 2009; Thomas et al., 2016). Invariably, within the context of health sciences, this would ideally require that the education problem being addressed is situated within a greater health concern (Bass and Chen, 2016). The curriculum scope may thus comprise a diversity of elements, such as the scope of practice, material being studied, learning outcomes, pedagogy, assessment and the factors that influence any number of these (Steketee, 2015). Healthcare as a profession requires clinical contextualization, thus curricula would spread to competency and workplace relation (Cate et al., 2015) given their positioning of learning in the world-of-work (Cate et al., 2015; Remesh, 2017).

Disclaimer

The activities mentioned in this document formed part of a Capacity Building in Higher Education grant that was co-funded by the European Union. The contents of this document are the sole responsibility of the Dirisana+ consortium and do not necessarily reflect the views of the European Union. The authors would like to thank the Erasmus+ programme for their financial support which allowed for the purchase of tablets and connectivity for students in rural clinics.

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1. Members

Table 1 provides an overview of the members of the Curriculum Sub-Committee, as well as the projects with which they are involved.

Table 1: Members of the Curriculum Sub-Committee.

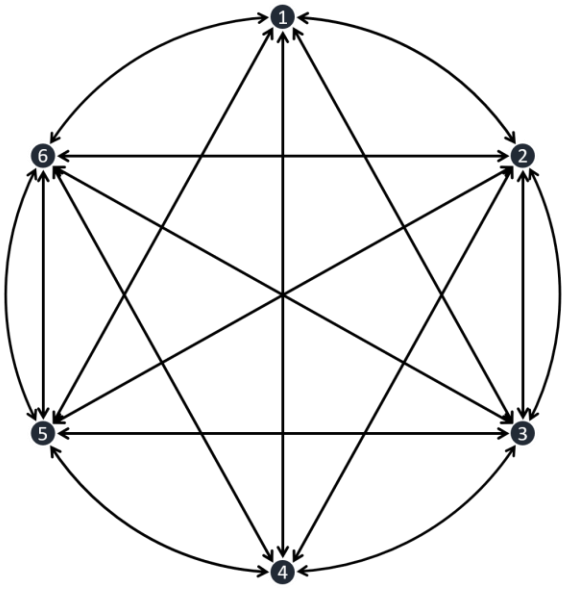
Consortium member	Surname	Name	Project
University of Pretoria	L'Abbe	Ericka	BHSc Honours: Human Biology curriculum and resources
	Louw	Murray	Curriculum alignment in clinical associate training
	Tshabalala	Zuki	Curriculum alignment in clinical associate training
	Adam	Sumaiya	Medical curriculum review and redesign
	Brand	Martin	Medical curriculum review and redesign
	Manning	Dianne	Medical curriculum review and redesign
	Yvette	Hlophe	Medical curriculum review and redesign
	Cordier	Werner	Pharmacology curriculum alignment Medical curriculum review and redesign
	Steenkamp	Vanessa	Member
Sefako Makgatho Health Sciences University	Botha	Gerda	Member
	Mabuza	Honey	Member
	Makubalo	George	Member
	Malan	Lucille	Member
	Mogotlane	Sophie	Member
	Mokoena	Andile	Member
	Mudau	Selina	Member
	Singh	Sandeepa	Member
University of the Witwatersrand	Brits	Desiré	Human Biology Honours course curriculum
	Meyer	Anja	Forensic anthropology curriculum
	Small	Candice	Forensic anthropology curriculum
	Crous	Lizelle	Curriculum development
	Hartmann	Carol	Medical curriculum review and redesign
	Pattinson	Stuart	Member
	Moch	Shirra	Member

Consortium member	Surname	Name	Project
University of Namibia	du Plessis	Adele	Member
Welwitchia Health Training Centre	Lipinge	Scholastika	Member
	Shali	Elizabeth	Member
University of Turku	Vainio	Olli	Member

2. Framework for curriculum development

Kern's curriculum development is a six-step process facilitating curriculum design (Thomas et al., 2016). Although proposed for medical curricula, the processes involved centre itself around a health context, and thus can be extrapolated well to a broader context (Just et al., 2010; Sweet and Palazzi, 2015). The six-step process is an iterative and cyclical framework that acknowledges the interconnected nature of each step thereof (Thomas et al., 2016), and thus requires an iterative review (Thomas et al., 2016). A focus point of Kern's model is the solution of a health problem through the efforts of the curriculum itself, and thus directly speaks to the learning objectives and competencies that students require (Thomas et al., 2016).

The framework follows i) problem identification and general needs assessment, ii) targeted needs assessment, iii) goals and objectives, iv) educational strategies, v) implementation, and vi) evaluation and feedback (**Figure 1**).



1. Problem identification and general needs assessment
Specific health care problem identified, and the approach currently used and required to solve it described.

2. Targeted needs assessment
Assessment of the student's need within the institution or learning environment, thus contextualisation required.

3. Goals and objectives
Description of broad goals advised by the needs assessment, leading to specific, measurable objectives (knowledge, skills and attitude).

4. Educational strategies
Selection of appropriate andragogy required to achieve objectives.

5. Implementation
Implementation of educational strategies, addressing all aspects thereof (such as obtaining resources, developing support structures, and assessment).

6. Evaluation and feedback
Evaluation of the performance of the curriculum and its students through formative and summative means.

Figure 1: Kern's six step model for curriculum development (adapted from Thomas *et al*. 2016).

2.1 Problem identification and general needs assessment

Problem identification is necessary to ensure the curriculum is built around an established concern within the health sector, otherwise it may lose focus or relevance (Bass and Chen, 2016). To ensure a full view of the problem is considered, stakeholder analyses (e.g. patients, health care professionals, medical educators) will be needed, as well as how such matters affect them (e.g. clinical outcomes, morbidity, mortality, use of resources, societal impact) (Bass and Chen, 2016). Stakeholder analyses should not just be an academic venture, but also involve society at large to ensure outcomes can reach societal needs. Solutions to the problem often lie in the differences between how stakeholders are currently resolving problems, and how they would ideally want to do so (Bass and Chen, 2016).

Four primary questions should be asked by anyone embarking on such a venture (Bass and Chen, 2016):

1. How are stakeholders currently addressing the problem?
2. Which factors affect the problem, for example, precipitating, predisposing, enabling, personal or environmental?
3. What is the ideal way for stakeholders to resolve the problem?
4. How does the ideal approach compare to what is currently being done to resolve the problem?

Given the diversity of contexts, there is not a single way to approach general needs assessment, and thus can be chosen or modified by the curriculum designers' circumstances. The following entails commonly-used approaches (Bass and Chen, 2016):

- Review of published literature, accreditation documents, regulatory policies and healthcare guidelines, which can extend to scoping or systematic reviews, or document analyses;
- Discussions with relevant stakeholders and associated consultants;
- Research-based methods to collect new information, such as evidence-synthesis approaches, focus group interviews, and others

2.2 Targeted needs assessment

Given the information obtained during the general needs assessment, the targeted needs assessment will further refine the way in which the problem will be approached (Hughes, 2016a). While the general needs assessment provides a rationale for curricular development or reform, the targeted needs assessment considers the student audience and their learning

context (e.g. prior knowledge, cognitive capabilities, health care practice, cultural norms) (Hughes, 2016a). As such, the targeted needs assessment also takes into consideration aspects of the hidden curriculum and the influences thereof (Hughes, 2016a), allowing for a better construct of what would be most appropriate to develop (such as the 21st century skills not directly aligned to the discipline) and the personal factors that could enable or hinder it. During the targeted needs assessment, content related to both the student and learning environment will be required (Hughes, 2016a). Targeted needs assessment will invariably help optimise resources by directing them to areas that require strengthening or are highly important away from less important or addressed in other curricula (Hughes, 2016a).

The targeted audience of the curriculum, the student, will be subject to the problem identified earlier. An informed profile of the students will be needed to ascertain how the curriculum should be developed to speak optimally to them (Hughes, 2016a). Content will differ based on context, however, it can be expected that important knowledge needed to develop the curriculum would include: prior experiences and professional development; sociocultural norms; current competencies (knowledge, skills and attitudes); learning strategies exposed to (Hughes, 2016a).

The learning environment, on the other hand, will depend on the context wherein the students find themselves, and would include: prior or current curricula within the degree; enabling, reinforcing and barriers forces; stakeholders associated with the degree; resources and infrastructure available; aspects related to the hidden curriculum (Hughes, 2016a).

Various modalities are available to perform a targeted needs assessment, including informal discussions, questionnaires, individual interviews, focus group interviews, direct observations, audits, tests and strategic curriculum planning sessions (Hughes, 2016a).

2.3 Goals and objectives

Once the targeted needs of students have been identified, goals and objectives can be set to assist in fulfilling the various specific needs. Based upon the descriptions of Thomas (2018), a goal is the broad educational objective that will be discussed within a curriculum, while the objective refers to a measurable objective that a student will achieve within the curriculum (Thomas, 2016). Within the language of the University of Pretoria, learning outcomes and assessment criteria will be used to refer to the goal and objective, respectively, as they serve the same function, but will be more easily understood within our academic context. The goals and objectives serve numerous functions, such as setting the expectations of the curriculum, providing evaluation structure, directs and focuses the curriculum to a specific aim, and suggests educational strategies to achieve them (Thomas, 2016).

Objectives should be set appropriately, as a lack of clarity may lead to poor focus during the development and reform of a curriculum (Thomas, 2016). Objectives are suggested to indicate several aspects quite clearly to ensure clarity is apparent: a specific verb indicating which criterion is to be performed, to what degree, and at what time (Thomas, 2016). During the creation of objectives, it is important to maintain realism that not every criterion can be included, and learning is not always as simple as a checklist of items. Objectives thus need to be focused enough to provide direction, however, maintain a level of flexibility to ensure that non-prescribed learning may also take place (such as that included within the hidden curriculum) (Thomas, 2016).

Objectives related to the student focus on the cognitive (knowledge), affective (attitude) and psychomotor (skill) competencies (Thomas, 2016). Although cognitive refers to the knowledge attributes, it should not be reduced to mere factual knowledge, as it also comprises higher cognitive processes, such as critical thinking and problem solving (Thomas, 2016). Those within the affective domain are typically more difficult to express; changes to attitude are less easily measured (Thomas, 2016). Psychomotor objectives (also referred to as skills) entail physical activities that are performed (e.g. clinical treatment) or habitual behaviour that is necessary within practice (e.g. interpersonal skills or routines) (Thomas, 2016). Within competency-based curricula, competencies are expressed as specific goals which a student should obtain at completion. These are typically observed to be integrations of the cognitive, affective and psychomotor domains (Thomas, 2016). Several instruments may be used to formulate such objectives, including Blooms taxonomy and Miller's pyramid (Thomas, 2016).

2.4 Educational strategies

While the first three steps of the curriculum development highlight what needs to be achieved, educational strategies will speak to the method by which it will be done (Thomas and Abras, 2016). Within adult learning, Malcolm Knowles emphasised the differentiation of learning in adults from that of children; as such, he highlighted rather using andragogy instead of pedagogy (Knowles, 1978), however, discussions on the suitability thereof is at times controversial (Ozuah, 2005). Andragogy, based on the studies of Knowles, highlighted several characteristics of adult learning: i) needing to know the relevance of learning a topic; ii) self-directness to learn; iii) prior knowledge due to past experiences; iv) eager to learn for development purposes; v) emphasis on problem-based rather than subject-based learning; vi) requires intrinsic motivation to learn (Ozuah, 2005). Such attributes can be targeted through a variety of means, and should be investigated separately via empirical means.

Regardless of age, three aspects of learning are highlighted: i) cognisance of preconceived notions and prior learning; ii) developing expertise; iii) developing metacognition and

metalearning within students (Thomas and Abras, 2016). Within learning, no individual is a blank slate, as years of experiences and prior educational settings have etched knowledge into their memories; as such, students may enter a curriculum with certain assumptions or competencies already in place that should either be rectified, addressed or built upon (Thomas and Abras, 2016). With this in mind, students will develop knowledge retrieval systems built from newly acquired knowledge assimilated or reworked from prior experiences to facilitate complex higher order thoughts; such processes build expertise (Thomas and Abras, 2016). A quality of effective learning and development as a life-long learner, is meta-cognition and meta-learning, typically mediated through action learning (Volz-Peacock et al., 2016) or other types of reflective practice (Thomas and Abras, 2016). Through these combined processes, ultimately a transformative learning experience should be built, where students create their own professional identities through reflection by questioning the world around them, and considering different ontologies and epistemologies (Thomas and Abras, 2016; Volz-Peacock et al., 2016).

Educational strategies would require two primary components: content and andragogical methods (Thomas and Abras, 2016) to appropriately develop required competencies. Content of the curriculum, or the underlying concepts that facilitate the development of the competency, is advised by the goals and objectives that have been identified, and should be optimally tailored to provide a basis for learning to occur for further construction and refinement of knowledge (Thomas and Abras, 2016). The methods of delivery refer to the facilitation practices that are used to help guide the learning process, and should be selected based on the goals and objectives identified for the curriculum (Thomas and Abras, 2016). Methods would need to be appropriate for achieving the objective, and thus stimulated the development of the cognitive, affective or psychomotor parameter (Thomas and Abras, 2016). It is often suggested that students have preferential learning styles, and thus a variety of methods should be placed into the educator's toolkit for facilitation purposes (Thomas and Abras, 2016); this is often a contentious subject, though variety may be useful in maintaining novelty within the learning environment, as long as it remains appropriate towards achieving the objective. Finally, the availability of resources should be an ever-present thought, and thus methods selected must be feasible within the means of the educational setting (Thomas and Abras, 2016).

2.5 Implementation

Implementation of a curriculum requires an in-depth knowledge of the resources available, and subsequent project management to ensure execution occurs to the highest quality possible (Hughes, 2016b). Four stages are defined during implementation: i) support

generation, ii) change planning and management, iii) operationalisation, and iv) ensuring viability. As such, implementation involves all aspects of stakeholder relations and resource management, as well as compilation of protocols for execution and review (Hughes, 2016b).

Resources can be diverse based upon what needs to be implemented. An educational team consists of far more than just the educators themselves, but also the support staff, instructional designers, curriculum directors, curriculum faculty and other external players (e.g. simulated patients) (Hughes, 2016b). Planning such curricular changes is time-intensive, thus staff availability needs to be assessed and incorporated into any such interventions (Hughes, 2016b). Furthermore, the student schedule is not to be overlooked, as time will need to be provided for them to adequately engage with the new curriculum (Hughes, 2016b). Facilities and funding needs to be included during planning to ensure that all that is required for the curriculum to be successful can be employed (Hughes, 2016b). As such, curriculum implementation will require not only internal support, but at times external support as well to help overcome challenges faced within the institution (Hughes, 2016b). Clearly communicated objectives are necessary to help streamline such changes and prevent any unruly detriments to it (Hughes, 2016b).

Implementation should not be taken lightly, and may require a systematic rollout instead of a full release to obtain pilot data on its appropriateness (Hughes, 2016b). The selection of such a phased implementation should be based on various factors, including, among others, the urgency of the change needed, identified barriers or challenges, and resources allocated (Hughes, 2016b).

2.6 Evaluation and feedback

The sixth step of Kern's curriculum development model speaks towards the evaluation and feedback systems employed within a curriculum (Lindeman and Lipsett, 2016). Differential assessment takes place to provide a multitude of information that informs all stakeholders of the performance of the curriculum (Lindeman and Lipsett, 2016). In such a way, two dimensions are addressed: i) who is being evaluated (student or programme), and ii) what is the purpose of the evaluation (formative [to improve performance] or summative [to judge performance and inform decisions]) (Lindeman and Lipsett, 2016). It goes without saying that the students require feedback throughout the curriculum to reflect and adapt their learning to ultimately acquire the competencies required of them, but also to indicate whether they have successfully done so (Lindeman and Lipsett, 2016). In a similar fashion, the various stakeholders of the curriculum must be aware of its performance, whether challenges have been encountered (and resolved), what improvements are needed, or if it is feasible to continue (Lindeman and Lipsett, 2016).

The design of such evaluation questionnaires is a systematic process, requiring knowledge of what the pertinent questions are, and the methods most appropriate to answer them (Lindeman and Lipsett, 2016). Such assessments may become overtly complex, and thus it is important to exceed the necessities thereof (Lindeman and Lipsett, 2016). Evaluation systems need to possess internal validity to ensure that the assessment accurately relates to the setting it is implemented in, though may also possess external validity should it be generalisable outside of its setting (Lindeman and Lipsett, 2016).To ensure that validity is achieved, it is necessary to maintain methodological rigor through the design and refinement of evaluations (Lindeman and Lipsett, 2016).

3. Projects

3.1 BHSc Honours: Human Biology curriculum (and additional teaching resources)

3.1.1 Project scope

The BHSc Human Biology Honours curriculum at the University of Witwatersrand is undergoing curricular changes, including realignment of assessments, and modifications to the curriculum. The main intention of the project is to provide a more aligned curriculum to students and also to streamline the assessment processes and formats. By modifying the curriculum we are increasing our focus on content directly related to Human Biology, thereby improving our students' understanding of science underpinning their research and Human Biology in general. Furthermore, by streamlining student assessment, we reduced the number of high stakes exams and also aligned our assessment with our teaching formats.

As part of the Technology Sub-Committee, we also created three-dimensional (3D) scans and printed models of juvenile bones for educational purposes. This was necessary as anatomical, biological anthropology as well as human biology education is grounded in the use of human remains (Štrkalj & Dayal, 2019). Unfortunately, human remains for teaching and research purposes are not always available or easily accessible (AbouHashem et al., 2015; Štrkalj & Dayal, 2019), as is often the case with juvenile skeletal remains. Due to the limited number of juvenile skeletal collections and the fragile nature of the material, juvenile remains are not readily available for teaching purposes, especially not at an undergraduate level. As such these students have limited opportunities to view and handle juvenile material, which limits their knowledge and experience. Detailed osteological knowledge of juvenile material is however imperative, especially in disciplines such as biological and forensic anthropology (Cunningham et al., 2016). To overcome the challenges faced by the lack of teaching material,

the use of 3D printed specimens is becoming increasingly popular (AbouHashem et al., 2015; Štrkalj & Dayal, 2019). This is because research has indicated the exactness of these samples when compared to other commercial material (AbouHashem et al., 2015; Štrkalj & Dayal, 2019). Therefore, 3D prints of juvenile skeletal remains can give students an opportunity to examine and handle replicas of this material (AbouHashem et al., 2015), thereby preventing damage and overuse of the actual human remains. Apart from printed 3D models, 3D scans are also often made available to students online, through various Learning Management Systems for students to interact, manipulate and further engaged with, while also allowing them time to study the material at their own pace and also providing an opportunity for them to revise their work in their own time (AbouHashem et al., 2015; Štrkalj & Dayal, 2019).

Juvenile skeletons are however, by nature small, lightweight and extremely fragile, thus compromising their use in physical teaching and learning practices. Given the fragile nature, scanning of the bones is also difficult. However, six skeletons were chosen: a neonate, 6-month-old, 1-year-old, 2-year-old, 6-year-old and a 12-year-old. Six skeletons were chosen due to the condition and stages of development needed for teaching purposes. The long bones such as the humerus, ulna, radius, femur, tibia and fibula were scanned to show the different development stages of the proximal and distal ends of bones as well as size differences. The crania of the skeletons were scanned to show the different stages of development and fusion of the fontanelles. The mandibles, pelvises and sacra of the well preserved skeletons were also scanned. Bones that were more than 20% damaged were not scanned. The neonate skeleton was completely articulated therefore it was sliced into three segments: skull, thoracic and upper limb and pelvis and lower limb bones. Models of the scans were exported as stereolithography file formats (.STL) for printing purposes, affording the team 89 scanned bones. Printing of the scanned models continues.

3.1.2 Human capacity development

Ms Kamini Pillay has been employed on a temporary basis as a research assistant to help with the scanning and printing of the juvenile skeletal remains. She has been trained in the use of three-dimensional surface scanning and printing of 3D models using the Ultimaker S5 and accompanying Cura 5.2.2 software.

3.1.3 Co-funding

Through the co-funding by the Dirisana+ grant, the University of the Witwatersrand could acquire an Ultimaker S5 3D printer for the creation of teaching material and skeletal replicas using additive manufacturing. The consumables used to 3D print these remains was co-funded by the institution itself.

3.1.4 Mobility

None.

3.1.5 Research outcomes

Ms Pillay presented a poster presentation at the ISMS XXVIII conference held from 5th to 8th August, 2023. Ms Pillay's presentation, co-authored by Prof D Brits and Dr A Meyer, titled: *Exploring the application of three-dimensional scanning and printing of human juvenile skeletal remains for teaching,* presented some results on scanning parameters, printing procedures and troubleshooting for future printing projects.

3.1.6 Non-research related outcomes

The BHSc Human Biology Honours programme has been altered to allow for greater alignment to outcomes, including the course pack and assessment structure. This has been approved by the University of the Witwatersrand academic committee for implementation and was successfully implemented in 2023 for the first time.

The 3D scanning of all the skeletal material has been completed and to date we have printed all the scanned material for the neonate, 6-month-old skeleton, 1-year-old skeleton, 2-year-old skeleton, 6-year-old skeleton and the 12-year-old skeleton. A total of 40 prints have been completed of various skeletal elements. Another 49 prints need to be completed. Due to the time required to complete a print and the challenges we have faced with temperature fluctuations during printing and nozzle extruder issues (possibly requiring a full service of the printer) we will require more time to complete all the prints. The introduction and implementation of the 3D models for teaching and learning purposes will begin in 2024 and will include use in the second year Human and Comparative Anatomy (ANAT 2021) course, the third year Human Biology (ANAT 3002) course as well as the BHSc Forensic Science Honours course.

3.1.7 Quality assessment

The effects of the changes implemented in the BHSc Human Biology Honours programme will be assessed after three years to establish if the changes have resulted in increased student marks and PG/research readiness.

Following the use of the 3D printed material in 2024, we plan to submit a questionnaire to the students, to assess their experiences, interactions and attitudes towards using the 3D-printed juvenile material for teaching and learning.

3.2 Medical curriculum review and redesign

3.2.1 Project scope

The University of Pretoria has embarked on significantly modifying the Bachelor of Medicine and Surgery (MBChB) programme at their Faculty of Health Sciences due to recommendations made during the Health Professions Council for South Africa (HPCSA) accreditation review. Prominent findings of the review yielded the following major remarks:

- Community-orientation was lacking in the curriculum and required strengthening;
- Multiple assessment points were necessary to ensure continuous assessment and a lower reliance on high-stakes assessment;
- Concerns were raised on the attainment of competency during clinical rotations;
- Research training should be bolstered; *and*
- The clinical platform would need to be strengthened to keep up with the demand.

Additional to the HPCSA review, internal discussions at the School of Medicine of the Faculty of Health Sciences, where the MBChB programme is housed, remarked on the following considerations of the current curriculum:

- The curriculum was designed for a smaller cohort (200) than what is currently catered for (300);
- The majority of teaching was via didactic means with an inappropriate educator:student ratio;
- Little to no curriculum mapping was available to support the current curriculum or changes made to it;
- Little to no integration is found between basic and clinical teaching, yielding a significant potential for duplication or misalignment;
- Assessments were predominantly at a lower cognitive level and via objective questioning;
- The programme would eventually need to accommodate a student cohort increase to 400 students; *and*
- Challenges in clinical teaching were identified during the Coronavirus Disease 2019 (COVID-19) pandemic that would have future repercussions if not addressed.

Given the findings, the rationale for the curriculum review was evident, which started in 2019 and became a project within the Dirisana+ programme. The ultimate goal was to design a living, lean curriculum that was values-based and person-centred, which would be fully mapped and optimise the limited resources available. A greater emphasis would be placed on

ensuring day 1 doctors were trained that could survive the future working environment while being proficient in the competencies required and promulgated by the national healthcare systems, and thus addressing the Sustainable Development Goals (3: Good Health and Well-being; 4: Quality Education). By using the LOOOP curriculum mapping platform, the curriculum could be documented throughout, allowing for a transparent, living curriculum that could be adjusted as per the needs and developments of the healthcare system.

3.2.2 Human capacity development

Human capacity development was featured for technical assistants employed for the project by the School of Medicine. Alongside Prof Ina Treadwell, an expert in the use of the LOOOP curriculum mapping platform, two postgraduate students (Ms Cara de Moura-Cunningham and Ms Charlise Basson) from the Departments of Pharmacology and Physiology were trained on the use of the LOOOP curriculum platform, concepts related to constructive alignment and mapping, and educational terminology. Their primary responsibility was to ensure that mapping of the curriculum took place under the supervision of Prof Werner Cordier and Dr Yvette Hlophe of the curriculum review team.

A non-degree based project was undertaken by Mr Benito Swart and Ms Lilandi Niemand as undergraduate students, where they investigated curricular perceptions related to sexual and gender minorities healthcare education. Their study allowed for the development of recommendations to the curriculum review team.

3.2.3 Co-funding

Co-funding was received from the School of Medicine to support all curriculum ventures, particularly for the employment of Prof Ina Treadwell, Ms Cara de Moura-Cunningham and Ms Charlise Basson.

3.2.4 Mobility

No mobility was planned as part of this particular project.

3.2.5 Research outcomes

Given the research-driven curriculum design approach, the project has allowed for several research outputs to be generated. These range from publications to conference outputs (Table 2), with several not listed in full as they are currently in the drafting stage.

Table 2: Research outputs of the project line.

Type	Platform	Output
Poster	Association for Medical Education in Europe, Lyon, 27 to 31 August 2022.	Adam S, Brand M, Cordier W, Hlophe Y, Lubbe I, Manning D, Mathabe K, Roos H, Spijkerman S, Turner A. Claiming their stake: Stakeholders influence on curriculum review
	Southern African Association of Health Educationalists, Gqeberha, South Africa, 19 – 21 June 2023	Hlophe Y, Adam S, Cordier W, Turner A. Reflective portfolio to promote critical thinking, ethics and leadership in a Pretoria School of Medicine
Podium	Flexible Futures 2021, Virtual 26 to 27 August 2021.	Adam S, Lubbe I, Cordier W, Brand M, Turner A, Manning D, Spijkerman S, Hlophe Y, Mathaba K. Move aside – we are coming in LEAN! (A medical school's curriculum redesigning and mapping journey)
	Higher Education Learning and Teaching Association Conference, Virtual, 6 to 10 December 2021.	Adam S, Lubbe I, Cordier W, Brand M, Turner A, Manning D, Spijkerman S, Hlophe Y, Mathaba K. Move aside – we are coming in LEAN! (A medical school's curriculum redesigning and mapping journey)
	Assessments and Evaluation in Higher Education Conference 2022, Virtual, 10 and 11 March 2022.	Lubbe I, Adam S, Cordier W. The wicked problem of curriculum development
	Southern African Association of Health Educationalists, Gqeberha, South Africa, 19 – 21 June 2023	Adam S, Roos H, Hlophe Y, Cordier W, Turner A, Manning D, Spijkerman S, Meintjies A, Brand M, Mathabe K. Incorporating the social justice curriculum into medical education: A wicked problem

3.2.6 Non-research related outcomes

Given the intellectual property of the new curriculum, the full detailed curricular documents cannot be provided. The overall programme showcases the curriculum from year I to VI, with scaffolded integration of the basic and clinical sciences from year III onwards to allow for earlier clinical exposure.

A recommendation was prepared based on the study of Mr Benito Swart and Ms Lilandi Niemand for the curriculum review.

3.2.7 Quality assessment

Quality assessment of the curriculum was attended to via benchmarking with national (University of the Witwatersrand and Stellenbosch University) and international (Maastricht University) institutions. Furthermore, the first accreditation visit to discuss the new curriculum will be quality assessed by the Health Professions Council of South Africa (HPCSA) in quarter 1 of 2025.

3.3 Pharmacology curriculum alignment

3.3.1 Project scope

At the University of Pretoria, two modules serve the pharmacology training needs of three healthcare sciences (Bachelor of Dietetics, Bachelor of Nursing Sciences, and Bachelor of Physiotherapy) and the Bachelor of Sciences (which features multiple combinations and foci). Unfortunately, these two specific third-year pharmacology modules suffer curricular misalignment due to the heterogeneity of the student populace. Given the unique curricular of each student cohort, the graduate outcomes require focused, contextual training that necessitate not generalising the curricula to an overarching basic pharmacology platform. Furthermore, according to the HPCSA and South African Nursing Council (SANC), each healthcare profession has a unique scope of practice that necessitates being competent. Unfortunately, according to these accreditation bodies, as well the registrations of these programmes at the South African Qualifications Authority (SAQA), little is specified about the competencies required of pharmacology.

Given these considerations, the aim of this project is to align undergraduate pharmacology at the University of Pretoria to the national needs of each profession as to ensure that they are fit-for-purpose in the world-of-work. As no pharmacology competency frameworks exist for dietitians or physiotherapists, it further necessitates investigation thereof. To facilitate this, a systematic review-led modified, reactive Delphi-study of each healthcare profession (dietetics, professional nursing, and physiotherapy) was conducted to determine nationally-relevant, modern day pharmacological competencies.

To facilitate industry involvement, which in this case refers to the unique healthcare practitioners, the following collaborations or community of support has been developed (**Table 3**).

Table 3: Collaborations and networks developed with industry.

Broad classification	Entity	Purpose
Accreditation body	Professional Board of Physiotherapy, Podiatry and Biokinetics (Health Professions Council for South Africa)	As an accreditation body for the three healthcare professions under investigation, their input has been critical in the success of nationally-relevant pharmacological competencies, and has allowed for a direct line of communication for profession-specific queries
	Professional Board of Dietetics and Nutrition (Health Professions Council for South Africa)	
	South African Nursing Council	

Broad classification	Entity	Purpose
Professional network	Association for Dietetics in South Africa	As professional networks of the three healthcare professions under investigation, it has increased communication with the broader network of professionals for lateral research projects
	South African Society of Physiotherapy	
	Forum of University Nursing Deans of South Africa	
	Nursing Education Association	
Institutional collaboration	Dr Desmond Mathye Department of Physiotherapy	Collaboration has allowed for physiotherapy-specific research in competency needs, particularly in the extension of scope of practice of the profession and preparation for future curricula
	Ms Natascha Olivier Department of Human Nutrition	Collaboration has allowed for dietetics-specific research in knowledge of food-drug interactions, which guides curriculum design and indicates potential deficient areas

3.3.2 Human capacity development

A human capacity development stream is designed to run concurrently with the project. Prof Werner Cordier, as project leader, is currently enrolled for his second Doctoral degree in Curriculum and Instructional Design and Development at the University of Pretoria. As the primary investigator, Prof Cordier has made use of this project to establish himself as a health professions education researcher. The following skillset have been developed as a consequence of this:

- Advanced knowledge in scholarship of teaching and learning;
- Curriculum design frameworks; *and*
- Delphi-methods.

Under his and his collaborators' guidance, several postgraduate students have received their degree, with a continuous stream of new individuals (**Table 4**).

Table 4: Students capacitated in the project line.

Student	Degree	Status	Project
Tsungirirai Kakono	BSc.Hons Pharmacology	Graduated 2021	Attitudes of physiotherapy students and graduates towards the inclusion of prescription rights to their scope of practice
Christie Megaw	BSc.Hons Pharmacology	Graduated 2022	Dietitians' knowledge and sources of information regarding food-drug interactions
Nonhlanhla Mbonani	BSc.Hons Pharmacology	Enrolled 2023	Evaluation of the labelling adherence of the food-associated effects of selected pharmacotherapy
Tsungirirai Kakono	MSc Pharmacology	Enrolled 2023	Capacitation changes of undergraduate and graduate physiotherapists for prescribing extension of scope of practice
Nonhlanhla Mbonani	MSc Pharmacology	Enrolled 2024	Factors influencing patient education of food-drug interactions between dietitians and patients in selected Tshwane clinics
Mavisha Naidoo	BSc.Hons Pharmacology	Enrolled 2024	Neuropsychiatric prescribing by nurses: A global scoping review

3.3.3 Co-funding

Prof Cordier successfully received a Scholarship of Teaching and Learning Grant from the University of Pretoria in 2021 amounting to R20,000 to co-fund technical assistance for his project.

3.3.4 Mobility

Prof Cordier attended to a single mobility to the European Union for curriculum-related discussions (**Table 5**).

Table 5: Mobility used during the course of the project.

Partner	Dates of travel	Outcomes of visit

Maastricht University	29 to 30 May	• School of Health Professions Education
		  ○ Prof Pim Teunissen and Prof Daniëlle Verstegen: Discussions of programmatic assessment and problem-based learning for future incorporation into the pharmacology curriculum
		• Department of Pharmacology and Toxicology
		  ○ Prof Ben Janssen: Discussions of pharmacology education within the framework of problem-based learning, including attendance of an on-site learning opportunity facilitated in this manner

University of Turku	1 to 5 June	• Grant writing workshop
		  ○ Interactive discussion on European Union-related grants, their nuances, application structures, and challenges
		• Department of Anatomy
		  ○ Interactive tour of the facilities, including their dissection halls
		• Simulation centre
		  ○ Interactive tour of the facilities, including their simulation venues for clinical training
		• Collaborative meeting of the Finish-Africa collaborators

Partner	Dates of travel	Outcomes of visit
		○ Showcase of the work done between collaborators in Finland and Africa, and potential future collaborations ● Department of Pharmacology ○ Discussions of their Masters in Drug Development programme to discuss longitudinal training opportunities for pharmacology education in South Africa ● MediOpe team ○ Discussions of faculty development at the University of Turku, including challenges and strengths within their approach to health professions education

3.3.5 Research outcomes

Given the research-driven curriculum design approach, the project has allowed for several research outputs to be generated by Prof Cordier and his students' work. These range from publications to conference outputs (**Table 6**), with several not listed in full as they are currently in the drafting stage.

Table 6: Research outputs of the project line.

Type	Platform	Output
Poster	Virtual 54th South Africa Society for Basic and Clinical Pharmacology Conference, 22 October 2021	Kakono TV, Mathye D, Brand S, Cordier W. Attitudes of registered physiotherapists towards the inclusion of prescription rights to their scope of practice. [*Best Poster in Clinical Pharmacology*]
	University of Pretoria Faculty Day, Pretoria, South Africa 23 to 24 August 2022	Cordier W, Balmith M, Manning D, du Toit P. Reviewing pharmacology competencies aligned to dietetic, nursing, and physiotherapy practice: A starting point for a national framework.
	World Congress of Pharmacology, Glasgow, United Kingdom, 2 to 7 July	Cordier W, Manning D, du Toit PH. A modified Delphi-review of pharmacological competencies needed for dietitians, nurses and physiotherapists in South Africa.
Podium	Southern African Association of Health Educationalists, Virtual, 27 to 30 June 2022	Cordier W, Balmith M, Manning D, du Toit P. Reviewing pharmacology competencies aligned to dietetic, nursing, and physiotherapy practice: A starting point for a national framework.
	Flexible Futures 2022, Virtual, 24 to 25 August 2022.	Cordier W, Balmith M, Manning D, du Toit P. Reviewing pharmacology competencies aligned to dietetic, nursing, and physiotherapy practice: A starting point for a national framework.
	55th Conference of the South African Society for Basic and Clinical Pharmacology, Virtual, 12 to 13 October 2022.	Cordier W, Balmith M, Manning D, du Toit P. Reviewing pharmacology competencies aligned to dietetic, nursing, and physiotherapy practice: A starting point for a national competency framework.
		Megaw C, Olivier N, Cordier W. Dieticians' knowledge and perceptions of food-drug interactions and factors affecting it. [*Runner-up: Best Podium in Clinical Pharmacology*

Type	Platform	Output
	Southern African Association of Health Educationalists, Gqeberha, South Africa, 19 to 21 June 2023.	Cordier W, Manning D, du Toit PH. A modified Delphi-review of pharmacological competencies needed for dietitians, nurses and physiotherapists in South Africa.
Manuscripts	Drafting phase	Cordier W, Balmith M, Manning D, du Toit PH. Pharmacological competencies necessitated by South African dietitians: Consensus from a national Delphi-panel.
		Cordier W, Balmith M, Manning D, du Toit PH. Undergraduate pharmacology training in nursing sciences: A Delphi-study to for competency framework development.
		Cordier W, Balmith M, Manning D, du Toit PH. Developing a pharmacological competency framework for undergraduate physiotherapy studies.
	South African Journal of Physiotherapy, 2023	Kakono TV, Brand SJ, Mathye D, Cordier W. South African physiotherapists' attitudes to medicine prescription as an extension of practice.

3.3.6 Non-research related outcomes

Several outcomes have been concluded that are either not research-related or are products of the research that has been conducted for institutional use (**Table 7**). As the project line is centred in curriculum development, all outcomes align to this core construct though. These include reflective dissemination at scientific conferences of the postgraduate experience, curriculum recommendation letters, and competency frameworks. As the competency frameworks are planned for publication, care has been taken to not unblind them prior to receiving approval.

Table 7: Non-research-related outcomes of the project line.

Type	Platform	Output
Dissemination	South African Association of Health Educationalists, Virtual, 27 - 30 June 2022	Cordier W. Failing forward through the five stages of academic grief: Doing a doctoral during COVID-19.
	Department of Pharmacology Webinar 21 September 2022	Mathye D. Physiotherapy and non-medical prescribing.
Curriculum recommendation letter	Professional Board of Physiotherapy, Podiatry and Biokinetics	Recommendations for further investigation of the extension of scope of practice for physiotherapists to include prescribing rights of a limited formulary
Proposed competency framework (full	Professional Board of Physiotherapy, Podiatry and Biokinetics	Proposed framework of pharmacology competencies for undergraduate physiotherapy

Type	Platform	Output
list will be available via publication)	Professional Board of Dietetics and Nutrition	Proposed framework of pharmacology competencies for undergraduate dietetics
	South African Nursing Council	Proposed framework of pharmacology competencies for undergraduate nursing

3.3.7 Quality assessment

The pharmacology curriculum project is current being quality assessed via internal supervisor review of Prof Cordier's thesis, as well as internal and external moderation by the examination committee.

3.4 Physical anthropology curriculum

3.4.1 Project scope

The BSc.Hons Anatomy (specialisation in Physical Anthropology) offered by the University of Pretoria has undergone several changes to their curriculum in the past five years, ranging from micro- to macro-level alterations to their teaching practice, assessments, and course content. This has been done to ensure a higher quality of teaching is achieved, and allow for greater constructive alignment between outcomes, pedagogy and assessment. The aspects approached during the project were primarily ensuring constructive alignment between the advertised learning outcomes, its teaching practice, assessment, and institutional and professional bodies.

3.4.2 Human capacity development

Dr AF Ridel was hired as a lecturer in the Department of Anatomy in October of 2022, increasing our current lecturing component to three people. She is an expert in 3D imaging, statistical analysis, and post-processing of digital models of human remains.

3.4.3 Co-funding

No co-funding was used

3.4.4 Mobility

Two mobilities were used (Dr AF Ridel) for teaching segmentation and post-processing with 3D Imaging in both Namibia (UNAM) and Finland.

3.4.5 Research outcomes

No research was done on this course.

3.4.6 Non-research related outcomes

Integrating additional modules into the BSc Honours course in physical anthropology reflects several key educational principles aimed at enhancing both the depth and breadth of student learning.

Firstly, the inclusion of a basic statistics module aligns with the principle of **integrating foundational knowledge**. Statistics is crucial for analyzing and interpreting data in both forensic and biological anthropology. By providing students with these skills, the course ensures that they can critically evaluate research findings and apply statistical methods to their own research projects, thereby reinforcing their ability to conduct rigorous scientific inquiry.

Similarly, the addition of a module on 3D imaging segmentation and post-processing addresses the principle of **relevance to current practices**. 3D imaging technologies are increasingly important in forensic anthropology for analyzing skeletal remains and reconstructing crime scenes. By incorporating this module, students gain practical skills that are directly applicable to contemporary research and forensic work, enhancing their employability and preparedness for advanced roles in the field.

The requirement for students to spend additional hours assisting with practical coursework aligns with the principle of **experiential learning**. Engaging in real-world tasks, such as working on forensic cases and supporting both undergraduate and postgraduate students, allows learners to apply theoretical knowledge in practical contexts. This hands-on experience deepens their understanding of course content and develops their professional competencies, preparing them for careers in forensic and biological anthropology.

Overall, these curricular enhancements ensure that the BSc Honours course is comprehensive and up-to-date, equipping students with essential theoretical knowledge, practical skills, and real-world experience necessary for success in the field of physical anthropology.

3.4.7 Quality assessment

We did the necessary procedures within the University to modify the outcomes of the course and to change the name of the course of a BSc Honours in “Physical Anthropology” to a BSc Honours in “Forensic and Biological Anthropology” as this is a more accurate reflection of the course. The course is internally reviewed within the University structures. We have not had

the course, or the modules for the course, reviewed by another South African institution. However, all student research projects within the course (30 hours of the course) are reviewed both by an internal and external examiner. All manuscripts submitted for publication are peer reviewed (external review) in ISI indexed journals. Currently, this is the only course in South Africa which provides background, as a postgraduate level, in both forensic and biological anthropology.

3.5 Curriculum development

3.5.1 Project scope

The project encompassed two components (1) review of the first two years of the Bachelor of Health Sciences (BHSc) and Bachelor of Medicine and Bachelor of Surgery (MBBCh) programmes and, (2) capacity building for Health Sciences Education research within the Faculty by support for two academic staff members to register for their PhDs in Health Sciences Education through Maastricht University.

The review of the first two years of the MBBCh and BHSc programmes is necessitated by changes in health professions education, workforce competencies and health care requirements within Southern Africa since the last review in 2007-2009. The project undertook an evidence-based approach to exploring and designing changes to these two years of the BHSc and MBBCh programmes to develop curricula which can equip students with the required skills and competencies to address South African health care challenges, whether as health professionals (MBBCh programme) or scientists in health related fields (BHSc programme).

Currently, capacity for supervision of PhDs in Health Professions Education is limited within the South African context. Capacitating two staff members to register for their PhDs through Maastricht University, builds capacity for formal training in Health Professions Education within Wits University and the country.

3.5.2 Human capacity development

Two students from the University of the Witwatersrand have received human capacity development in curriculum-related aspects from the Maastricht University.

Table 3: Students capacitated in the project line.

Student	Degree	Status	Project
Carol Hartmann	PhD (Health Professions Education) Maastricht University School of Health Professions education (SHE)	Ongoing (Sept 2022 to Sept 2027) Study 1 – Scoping review: initial screening completed; full text screening in final stages and data extraction about to begin (end Oct 2024). Project delayed due to curriculum review project. Study 2 – ethical approval for interviews received.	Development of a tool for self-evaluation of institutional systems prior to implementation of problem based learning (PBL) educational strategies. It is hoped the tool will improve institutions' ability to design systems and allocate resources to appropriately support the implementation of PBL, thus improving the probability of successful implementation.
Stuart Pattinson	PhD (Health Professions Education) Maastricht University School of Health Professions Education (SHE)	Ongoing (Sep 2022 – Sep 2026) Study 1 – Research paper submitted to journal with revisions – awaiting feedback Study 2 – Data collection complete, data analysis underway Study 3 & 4 – Awaiting ethics approval	Research, through Maastricht University in the Netherlands, into preparedness for practice of South African junior doctors, aimed at undergraduate curriculum evaluation and innovation to better equip graduates for the challenging transition into internship.

Both students attended the *Developing a PhD Proposal* online course at the School of Health Professions Education, Maastricht University in October 2021. Following the course they successfully submitted their PhD proposals in March 2022 and registered for the PhDs in September 2022.

Both candidates also completed the following certificate courses and workshops through Maastricht University in 2023:

- Open Science
- Research ethics and integrity
- Science communication
- Critical Choices in Qualitative Research

In addition, Dr Carol Hartmann has completed the Workshop on Search Strategies for Systematic and Scoping Reviews by the Maastricht University Library.

Both candidates have shared their learning from these courses and the experience of undertaking a PhD in SHE at Maastricht, with the 2024/ 2025 cohorts of Masters in Health Sciences Education and Postgraduate Diploma in Health Sciences Education students at Wits University. In addition, their experiences as well as the mobilities of Prof Leo Köhler and Prof Daniëlle Verstegen, has led to the establishment of a Design-Based Research group in Health Sciences Education which continues to build capacity in this field within Wits University.

3.5.3 Co-funding

Cofunding was provided by the Centre for Health Sciences, Faculty of Health Sciences, University of the Witwatersrand to cover the following:

- Registration fees for Dr Carol Hartmann to attend AMEE 2022 in Lyons, France.
- Registration fees for Dr Carol Hartmann and Dr Stuart Pattinson to attend the SHE (School of Health Professions Education) Academy in March 2023.
- Tuition fees for Dr Carol Hartmann and Dr Stuart Pattinson to register for the PhD programme at SHE during the 2022/2023 and 2023/2024 academic years.

Co-funding was provided by the Unit for Undergraduate Medical Education, Faculty of Health Sciences, University of the Witwatersrand to cover the following:

- Registration and travel costs for Dr Stuart Pattinson to attend AMEE 2024 in Basel, Switzerland.

3.5.4 Mobility

Carol Hartmann: Maastricht Mobility 21/08/2022- 31/08/2022

21-25th Visited SHE, Meetings with Prof Leo Köhler and Prof Daniëlle Verstegen regarding the PhD proposal and plan. Attended Search Strategies for Systematic and Scoping Reviews Workshop on 25th August. Attendance at Ottawa conference 26-28/08/2022, Lyon, France, Theme: Reimagining assessment across the continuum and AMEE 2022, 28 - 31/08/2022, Lyon, France, Theme: redefining health professions education together. Attendance at the conference allowed for participation in a number of key workshops and sessions related to curriculum development and design as well as research in health professions education. Attendance at these sessions directly impacted on the design of the curriculum review and development of the PhD project.

Carol Hartmann: Maastricht Mobility 14/11/2022- 24/11/2022 Meetings with Prof Leo Köhler and Prof Daniëlle Verstegen regarding the progress of the PhD. Meetings with Herma Roebertsen, Faculty development officer; Judith Sieben, coordinator of the Bachelor of

Medicine Programme; Jill Whittingham, Evaluations officer; Diana Dolmans, Chair of the Department. Scoping review protocol and searches.

Matty Van Niekerk: Maastricht Mobility 14/11/2022- 18/11/2022 Meetings: Prof Daniëlle Verstegen regarding curriculum development, design and educational research. Meeting with the PhD representative Yuanyuan Zhu. Meeting with Herma Roebertsen, Faculty development officer and Diana Dolmans the Chair of the Department. The visit directly informed the direction of Mrs Van Niekerk's PhD as well as the ongoing curriculum review of the BScOT programme at Wits.

Stuart Pattinson: Maastricht Mobility 22/11/22-02/12/22 Meeting with PhD supervisor Hans Savelburg. Meeting with Danielle Vestegen – Research advice. Meeting with PhD co-ordinator Janneke Frambach. Meeting with the coordinator in the Bachelor of medicine program - Judith Sieben. Meeting with the coordinator of the Master of Medicine programme - Marion van Lierop. Meeting with the director of the Clinical Skills Unit – Fenke Jongen. Meeting with leader of the team instituting Programmatic Assessment methods - Marjan Govaerts. Meeting with PhD representative Yuanyuan Zhu. Attendance of SHE PhD meeting. Research Ethics and Integrity Course. Maastricht Ethics application.

Stuart Pattinson and Carol Hartmann: Maastricht Mobility 26/03/23/-30/03/23 26- 28 March – SHE (School of Health Professions Education) Academy. SHE Academy is a community-building conference for PhD candidates and staff members of SHE. It aims to provide an opportunity for participants to develop academic skills and knowledge and to meet and learn from fellow PhD candidates and staff. This included an opportunity to formally present queries and dilemmas from my own research and receive valuable feedback from staff and fellow PhD students. Thursday 30 March - attended the farewell ceremony and lecture of Prof Jeroen von Merriënboer, one of the "fathers" of cognitive load theory and the 4CID model, who shared the valuable insights he has gained over his extraordinary career as a researcher in health professions education.

Daniëlle Verstegen: Wits mobility 26/06/2023- 07/07/2023 Webinars on Design-based research and Student-centred learning. Attendance and facilitation of Masters in Health Sciences Education (MHSE) Journal club. Workshops conducted on Design based research (2) for Wits staff and Dirasana partners, Problem based learning workshops (4) conducted for the Department of Occupational Therapy and School of Oral Health Sciences. Consultations on curriculum review and governance with representatives of the Bachelor of Science in Occupational Therapy, Bachelor of Health Sciences, Bachelor of Medicine and Bachelor of Surgery and Bachelor of Dental Science programmes. Meeting with staff of the Centre for

Health Sciences Education (CHSE) regarding the MHSE programme and post-graduate supervision. Meetings with Carol Hartmann regarding PhD progress.

Leo Köhler: Wits mobility 03/02/2024- 10/02/2024 Consultations on curriculum review and governance structures with representatives of the Bachelor of Science in Occupational Therapy, Bachelor of Health Sciences, Bachelor of Medicine and Bachelor of Surgery and Bachelor of Dental Science programmes. Workshop for Department of Occupational Therapy on creation of PBL cases. Presentation on Maastricht Biomedical Sciences degree to staff of the Bachelor of Health Sciences programme. Meetings with staff of the Schools of Anatomical Sciences and Physiology. Meeting with staff from CHSE regarding post-graduate supervision and review of the visit.

3.5.5 Research outcomes

Stuart Pattinson: Paper titled "Not ready in the ways that count – a qualitative exploration of junior doctor's perceived preparedness for practice using Legitimation Code Theory" with submitted with revisions based on reviewer comments to Advances in Health Professions Education, 9 September 2024 – awaiting feedback.

Research findings from this paper presented at:

- The 2024 Southern African Association of Health Educationalists (SAAHE) conference in Durban, South Africa – June 2024
- The 2024 International Association for Health Professions Education (AMEE) conference in Basel, Switzerland – August 2024
- The Wits School of Clinical Medicine Retreat - July 2024

3.5.6 Non-research related outcomes

Stuart Pattinson and Carol Hartmann: SAAHE 19-21 June 2023 – Seaside Story Presentation (Stuart Pattinson and Carol Hartmann) Multiple Minds: the impact of collaboration on conceptualizing a PhD proposal that works. In this Seaside Story we will shared our experience of taking part in a PhD proposal writing course through Maastricht University during which we developed our PhD proposal.

Stuart Pattinson, Carol Hartmann, Lisa Kempshall and Lizelle Crous: SAAHE 19-21 June 2023 - Poster presentation, Moving Mountains: inspiring lecturers in the health sciences to reconceptualize learning experiences. In this poster presentation we shared key lessons learnt when assisting lecturers to implement blended and authentic learning practices as part of the revised curriculum.

Carol Hartmann, Hawabibi Laher and Lizelle Crous: In progress: four infographics and gudies for staff are under development to share lessons learnt during the curriculum review processes, as well as key design principles for the implementation of collaborative, contextual, blended learning activities. These will be shared through the Centre for Health Sciences Education (CHSE) website as open-access resources. It is expected that the first of these will be available in January 2025.

The support of the Dirasana+ project through capacity development of Dr Carol Hartmann and the provision of the two research assistants, allowed for the successful review and implementation of the first two years of the MBBCh programme at Wits University. The revised programme incorporates competencies of academic literacy, digital literacies (including the use of AI and data analytics in health care), information literacy and quantitative literacies as well as introducing knowledge and skills related to the structure and function of the South African health care system and experiential learning opportunities within the clinical environment. These changes are expected to make a substantial contribution to students' development as health care practitioners capable of providing health care in the south african context and influencing the health and wellness of patients and communities. This process has also impacted on curriculum reviews and quality assurance processes in the Dentistry and Biokinetics undergraduate programmes as well as a number of postgraduate programmes within the Faculty.

3.5.7 Quality assessment

The required processes and procedures of the School of Health Professions Education, Maastricht University, were followed for acceptance of the PhD proposals and registration of both candidates for the PhD. The processes for monitoring of PhD progress and standards are being adhered to as required by Maastricht University.

For the revised MBBCh curriculum, the required University processes for approval of the curriculum changes, including the resource analysis and documentation of alignment of the curriculum were submitted and approved through the University processes. The processes for review of the curriculum and design of the new courses were benchmarked against the literature as well as university processes for such tasks. We are currently in the process of evaluating the implementation of the first year of the new MBBCh curriculum.

4. Workshops presented

The following workshops (**Table 10**) have been presented with the involvement of the Curriculum Sub-Committee.

Table 10: Dissemination outcomes of broad curriculum-related outcomes.

Workshop	Date	Location
Assessment and Curriculum Workshop	19 to 22 April 2022	Waterkloof Guest House, Pretoria, South Africa
Quality Assurance of the Curriculum	6 November 2023	Online

5. Dissemination of broad curriculum-related outcomes

The following comprises all dissemination that has been done in the broader context of the Curriculum Sub-Committee, and thus do not necessarily specifically refer to a project, but the overarching concepts, reflections and outcomes of individuals associated with the committee (**Table 11**).

Table 11: Dissemination outcomes of broad curriculum-related outcomes.

Type	Platform	Output
Blog post	Dirisana+ blog	Cordier W. From teacher to tutor: Can we make the shift? 16 July 2021.
		Swart B, Niemand L. June was International Pride Month, but can we be proud? 23 July 2021.
		Cordier W. Let's be brave: Leading curricular change by reflecting on what we've learnt. 22 March.
		Pattinson SR, Hartmann C. SHE PhD Proposal Writing Course, Maastricht University. 29 May 2022.
		Masenya T, Molema G, Magadlela K. CHSE Intern Experiences. 11 October 2022.
		Pattinson SR. Development of qualitative research and curriculum design skills at Maastricht University. 30 January 2023.
		Hartmann C. Greetings from Maastricht! 3 February 2023.
		Pattinson SR, Hartmann C. Maastricht SHE Academy 2023. 17 April 2023.
		Cordier W. Educational endeavours on the global stage: Similar challenges dressed with a different bow. 24 June 2024.
Social media post (excluding blog post mentions)	Instagram	Student spotlight: Tsungirirai Kakono. 31 March 2022.
		Assessment and curriculum workshop. 12 May 2022.
		Assessment and curriculum workshop. 8 June 2022.

6. Broad challenges encountered during the funding period

Successes of the Sub-Committee have been indicated in Section 4 as individual projects, but as with any programme, challenges were encountered. Most notably, the nature of the work being done by the sub-committee was academic, which invariably creates logistical complexities between the goals of the projects, and the performance management of each member. As such, notable delays were incurred due to the academic responsibilities of all members, which invariably resulted in missed deadlines and opportunities. Given the hard COVID-19 lockdown measures experienced during 2020 and 2021, and the transitionary state back to a full relaxation of governmental measures, much of the work required rescheduling to ensure that all aspects could still be covered.

Many of the challenges encountered, particularly in relation to the curriculum, were based on change management within the various institutions. As a complex and overarching change within the education of students, which invariably involve many different roleplayers, navigating the terrain between student satisfaction, regulatory bodies, institutional processes, and staff mindset and philosophy required careful and structured interventions, which was not always possible given the myriad of factors involved.