



From Bricks and Mortar to Clicks and Clouds

Creating a Virtual Tour of Treasury Through Time

Summary

Hidden beneath the 1839 Adelaide Treasury Heritage Building is an underground tunnel that includes the old treasury vaults and furnaces for lithographic printing to produce surveying maps. This buried secret is brought to life through a new interactive 360 virtual tour featuring video stories and interactives contributed by historians, researchers, educators, and executives that together reveal the rich history of finance and economic development in South Australia. The interactive walk-through is currently being piloted in Finance courses to demonstrate the enriched teaching and learning opportunities offered by integrating interactive 360° virtual tours into courses.

Project Team

- Miss Shiao-Lan Chou (Project Leader – UniSA Business)
- Mr Roger Edmonds (Project Officer)
- Mr Ron McIver (Project Advisor – UniSA Business)
- Dr Lei Xu (Project Advisor – UniSA Business)
- Prof Martin Shanahan (Project Advisor – UniSA Business)
- A/Prof Tom Raimondo (Director - Project LIVE – UniSA STEM)
- Mr Steve Hill (Technical Officer - Project LIVE – UniSA STEM)

Independent Reference Group

- Mr Stuart Hocking (Deputy Chief Executive – SA Department of Treasury & Finance)
- Mr Patrick Bugeja (Manager, Visitor Experience – National Trust of Australia (SA))
- Ms Katie Obst (Hotel General Manager – Adina Apartments Hotel)

Other Participants

The following people contributed to the project, principally through recording the digital stories embedded in the virtual tour.

- Ms Katie Obst - Hotel General Manager, Adina Apartments Hotel
- Mr Graeme Fanning - Tour Guide, National Trust (South Australia)
- Ms Helen Lawry – Education & Family Planning Officer, National Trust (South Australia)
- Mr Andrew Blaskett – Executive Director, Projects, SA Department of Treasury & Finance

- Mr David Reynolds – Chief Executive, SA Department of Treasury & Finance
- Mr Dave Elliott – Senior Account Analyst, SA Department of Treasury & Finance
- Ms Ana Beveridge – Office Manager, Budget & Performance SA Department of Treasury & Finance
- Ms Trish Borlase - Senior Analyst, Board of Treasurer’s and Secretariat, SA Department of Treasury & Finance
- Mr Stuart Hocking - Deputy Chief Executive, SA Department of Treasury & Finance
- Mr Gerard Stone, Senior Lecturer, University of South Australia

The following people also contributed to the project, through their quality assurance and provision of digital content used in the virtual tour.

- Ms Kristy Ferguson, Education Officer, Revenue SA
- Mr John Wright, former Deputy Under Treasurer, SA Department of Treasury & Finance
- Mr John Hill, former Senior Officer SA Department of Treasury & Finance
- Mr Paul Ploksts, former Senior Officer SA Department of Treasury & Finance
- Mrs Kathy Dennis (daughter of former Under Treasurer Ron Barnes)

Key Deliverable

A virtual tour generated through a series of 360 images of the tunnels and over 20 rich digital stories and interactives that together create an interactive experience to reveal the rich history of finance and economic development in South Australia. There are multiple ways for students to consume it, from using mobile devices, to desktop mouse or touch-screen interaction and head mounted displays (HMDs).

The virtual tour can be accessed at <https://bit.ly/3wZAHSD> on a computer or scan the QR Code below to bring the tour to your mobile phone.

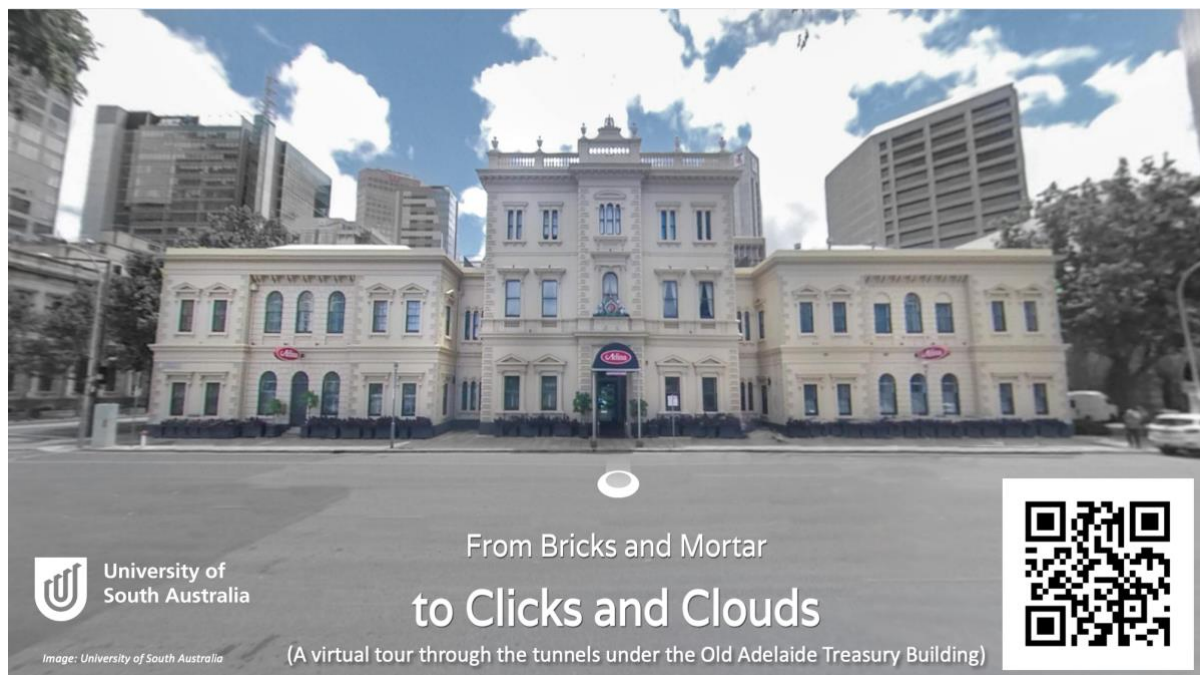


Figure 1 – Portal to the Treasury Virtual Tour

Timeline

The project was funded through a 2019 teaching and learning grant and was integrated into a course in 2021.



Figure 2 – Timeline of Development

COVID and Other Challenges

The global COVID-19 epidemic and the South Australian and University response to it throughout 2020-2021 caused significant time delays (over 12 months) in the project timeline beyond the control of the project team.

Embedding of the H5P interactives used in the digital storytelling which were hosted in a UniSA non-course Moodle site proved difficult to render in the virtual tour software (Kuula) without specific html coding which as a result, reduced the interactivity. The technical issue was not able to be resolved by the UniSA IT help-desk because it involved changing global user permissions. As a result, the sustainability of the current hosting of the H5Ps (in H5P.org) cannot be guaranteed and further investigations are warranted.

Target Audience

Undergraduate students undertaking both face-to-face and online courses in Finance, Economics and Australian History.

Pedagogical Objectives and Purposes

The interactive virtual tour of the Adelaide Treasury tunnels shows how and why Treasury formerly operated as a bricks and mortar institution through to its digital equivalent in the modern age. This total experience was beyond reach through examining readings of print-based articles about the history and function of a State Treasury.

The immersive 360 virtual tour experience of the Adelaide Treasury Tunnels bridges the research-teaching nexus. It is a new and innovative way to tell a story, share experiences and change thinking in students enabling them to access new perspectives and new insights on topics in a course which were previously rated by students in course evaluation reviews as uninteresting and uninformative.

The interactive virtual tour depicts a digital story of real events of the history of the South Australian Treasury and the evolution of today's financial systems. Engaging with it has the potential to strengthen a student's immersion with their study material by using devices like mobile phones and laptop computers which are very familiar to them. Using head mounted devices to engage with the virtual tour delivers high-interaction and high-context virtual reality situational learning to students.

In particular, we wished to determine if learning in the immersive virtual environment of an interactive 360 virtual tour would be:

- an effective means for students to 'visit' a place they might otherwise not be able to easily access?
- a replacement for a textbook case study or an eReading in a course?
- improve student engagement and understanding of concepts?

Technology Innovation Strategies

To create the 360 virtual tour our team used a range of tools including 3D photogrammetry, terrestrial laser scanning (LiDAR), 360-degree panoramic photos, rich digital stories (videos) and interactive quizzes and challenges using H5Ps. It is both exploitable and exploratory. Exploitable by 'bringing back to life' an existing physical structure (ie the tunnels under the building to how they were used by Treasury over 150 years ago) and exploratory by using new technologies to achieve this and new way for students to 'explore' the tunnels virtually.



Adding simple gamification strategies into the virtual tour in the form of quizzes and links to external websites converts 'desired' tasks into 'play' tasks to motivate students and improve retention and recollection of knowledge. Using points for correct answers to quizzes and activities adds challenges and motivational elements of competition to the experience.

By navigating their way through the underground tunnels and playing the digital stories students discover the history of the South Australian Treasury and the evolution of today's financial systems. It contains interviews from historians, researchers, educators and Treasury executives to provide insights into each stage of its development. Students can also take a step back in time with our 3D reconstruction of the underground tunnel network hidden beneath the Adelaide CBD.

The virtual tour has 7 milestones and 21 digital stories and 4 H5P interactives.

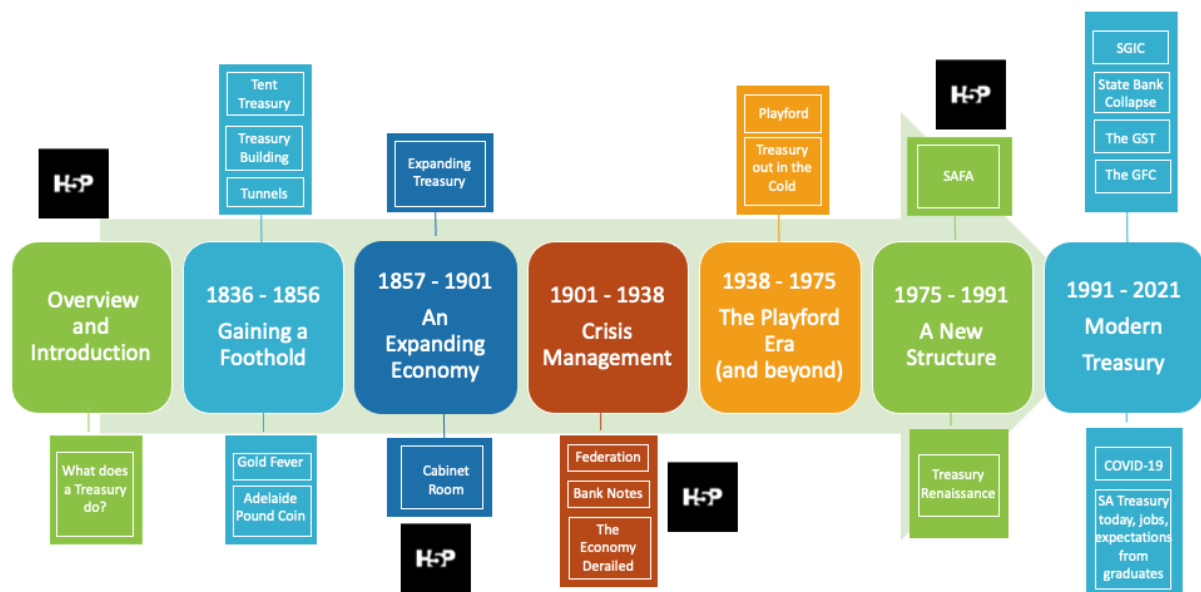


Image source: Wikipedia.org

Figure 4 – Milestones, Digital Stories and H5P Interactives

Results and Evaluation

The pedagogical outcomes of embedding the virtual tour are currently being evaluated by on-campus BANK 1005 Financial Markets & Institutions students in Study Period 5, 2021. After engaging with the tour and completing a quiz, students were invited to complete a non-mandated online survey which asked them to rate the virtual tours overall impact and functionality, the quality of its digital stories, and importantly its relevance as a teaching and learning resource. This was to be followed by broader questions through three focus group sessions facilitated by independent staff.

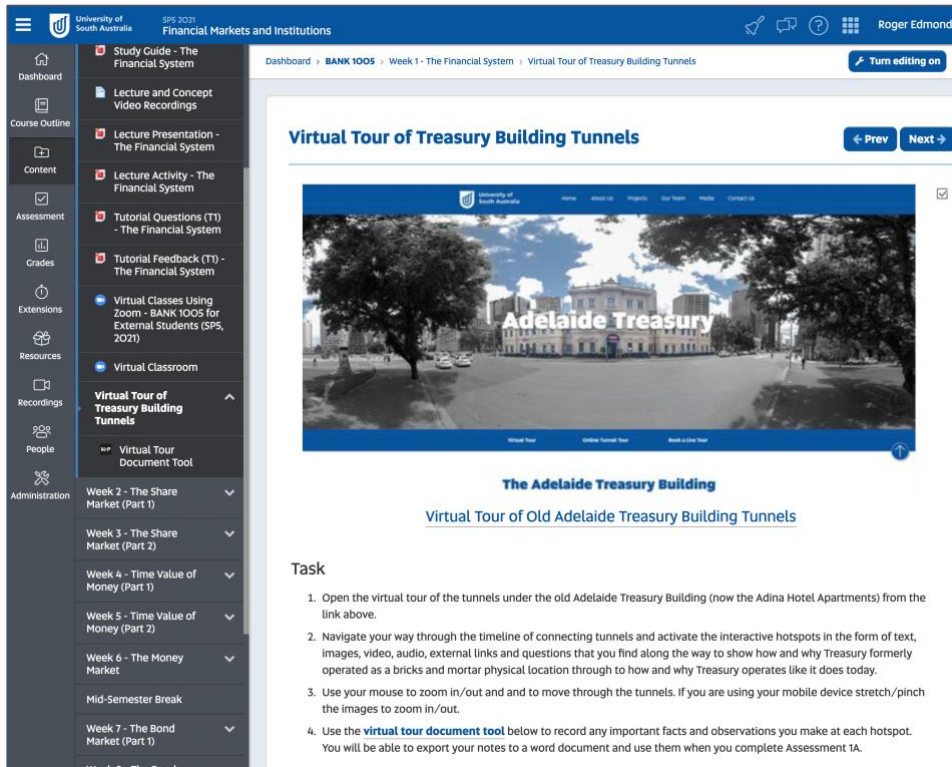


Figure 5 – Virtual our content in Financial Markets & Institutions course website

At the time of completing this report, 20% of the students have responded to the online survey. The focus groups which were to begin late in November were postponed at short notice after SA opened its borders to COVID and interstate and international travellers and the University encouraged staff to adopt more flexible working arrangements. Funding will be pursued from within the Business Academic Unit in 2022 to conduct these focus groups after a second group of students are exposed to the virtual tour in Study Period 2, 2022.

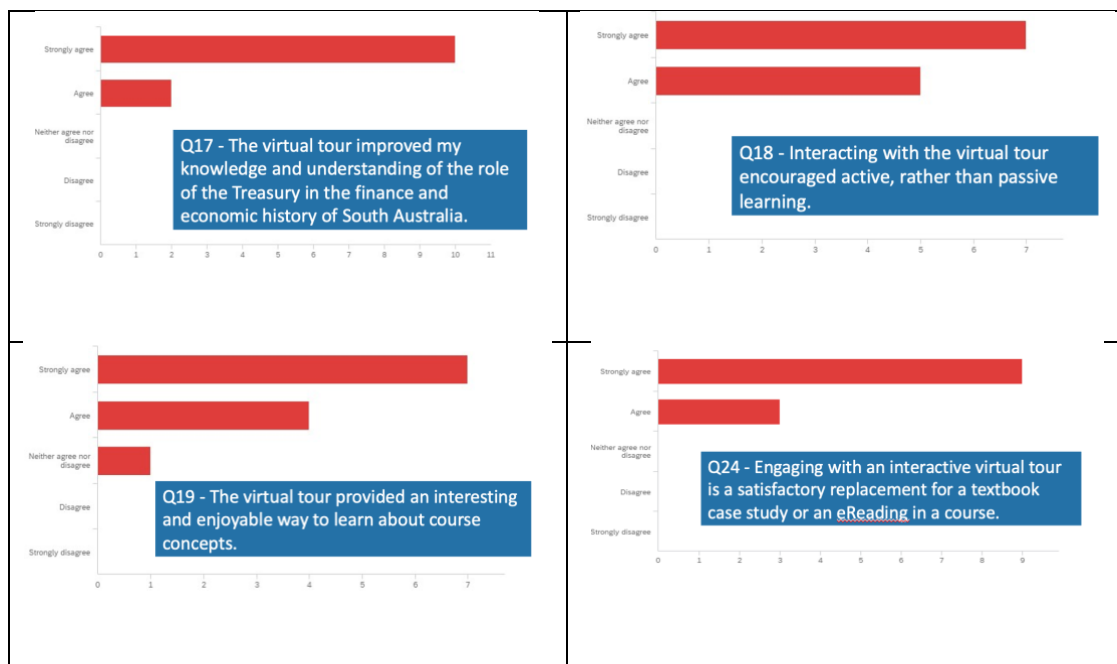


Figure 6 – Results to four exploratory questions in online survey

Qualitative results from selected responses to the online survey ($n=20$) are shown above however, interested parties can also [download a complete snapshot of results](#) (@ November 26, 2021).

Anecdotal Student comments extracted from the survey results include:

"There was different people explaining the story making it more engaging. The pictures really help understand the concept better and interactive"

"The active learning aspect was something which was new and I enjoyed this new method as I understood what the videos were trying to teach us"

"It was a different way to learn and engage"

"The virtual tour was interactive which was a unique and novel experience I may have not had the chance to have, especially the exploration of the treasury tunnels and information about its uses in history"

Conclusion and Recommendations

It is too early to demonstrate that improved learning has resulted from including the virtual tour in the finance course. However, there is sufficient qualitative evidence from the survey results of improved engagement as a result of students immersing themselves in the virtual tour. Students enjoyed 'visiting' a location they would not normally access and preferred learning through a virtual tour than reading an equivalent case study in a textbook. Students also enjoyed the active learning pedagogy associated with the virtual tour. The survey results and focus group sessions now planned for 2022 will assist in either substantiating or challenging these early findings.

We make the following recommendations after conversing with stakeholders and students.

- Establish independently facilitated small size focus groups student focus groups after integration in SP2 2022 courses in which broad questions derived from the online survey of the virtual tour of the Old Treasury Building Tunnels will be discussed both a 1.5 hour on-campus session or online via Zoom.
- Promote the use Treasury virtual tour in other UniSA courses (e.g. Economics, Australian History, Construction)
- Promote the virtual tour use in high schools
- Use in induction process for new Department of SA Treasury & Finance staff
- Create additional H5P interactives and embed into the virtual tour
- Promote the VR experience of the virtual tour through head mounted displays
- Investigate paid hosting of H5P interactives embedded in the virtual tour in <http://h5p.com>
- Conduct additional research on the use of this virtual tour in pedagogy to help inform the development of a wider '*teaching and learning in a virtual environment*' framework for use by UniSA staff and students.

Dissemination Activities

Key Stakeholder Celebration at Adina Hotel Apartments

The end of April marked a significant milestone in the project with the release of a prototype tour. A presentation and celebration event were held with key stakeholders at the Adina Apartments Hotel (the former Adelaide Treasury Building).



Shiao-Lan Chou



Roger Edmonds

Figure 7 – Presentations at the Stakeholder Meeting, April 2021



Back Row (L-R)

Ross Ellery (NT), Stuart Hocking (DTF), Anna Beveridge (DTF), Andrew Blaskett (DTF), Dave Elliot (DTF), John Hill (ex DTF), Kathy Dennis, Kallan Dennis, Patrick Bugeja (NT), Graeme Fanning (NT) Roger Edmonds (UniSA)

Middle Row (L-R)

Theodore Xu (UniSA), Trish Borlase (DTF), David Reynolds (DTF), Katie Obst (Adina)

Front Row (L-R)

Helen Lawry (NT), Kristy Ferguson (Revenue SA), John Wright (ex DTF), Shio-Lan Chou (UniSA)

Absent

Steve Hill (UniSA), Tom Raimondo (UniSA), Ron Mclver (UniSA), Martin Shanahan (UniSA), Gerard Stone (UniSA), Paul Ploksts (ex DTF)

Figure 8 – Key Stakeholders Presentation & Celebration April 2021

UniSA Business

An article about the project was published in the [UniSA Business Bulletin](#) of May 7, 2021.

UniSA ProjectLIVE Website

The interactive tour is one of several being prominently showcased on the [UniSA ProjectLIVE website](#). ProjectLIVE (Learning through Immersive Virtual Environments) is a cross-disciplinary initiative at the University of South Australia focused on creating virtual and augmented reality experiences that bridge the research-teaching nexus. ProjectLIVE uses immersive visualisation technologies to tell stories, share experiences and change thinking, enabling access to new perspectives and new insights that were previously beyond reach.

Department of Treasury & Finance

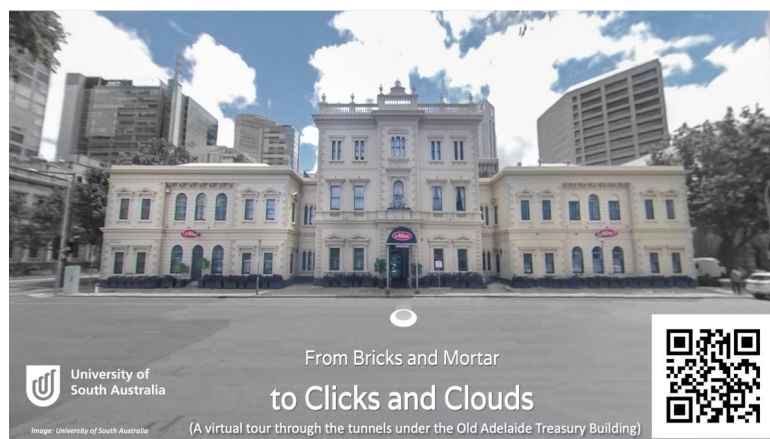
An article was published in the [October edition of the INSIDEOUT SA Government Staff Newsletter](#).

UniSA Teaching & Learning Symposium 2021

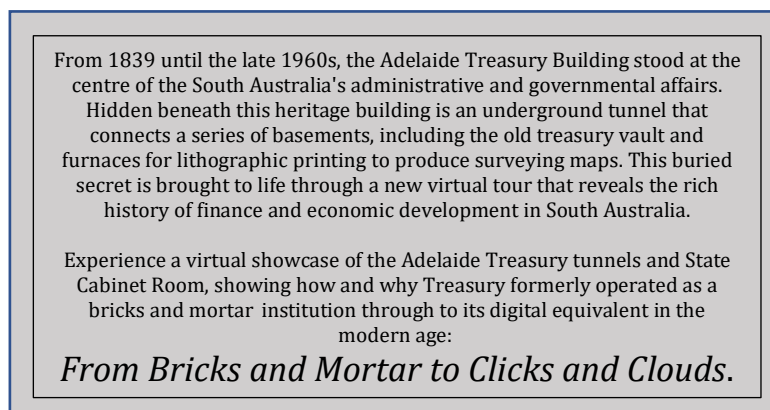
A [presentation](#) on November 12 at the 2021 UniSA Teaching & Learning Symposium described the processing, collaboration, outcomes and deliverables and included sharing early information collected from student's online survey.

Adina Apartments Hotel (Old Adelaide Treasury)

A DL card (currently in DRAFT format) will be offered to guests staying at the Adina Hotel with information about the project and the tunnels. Scanning a QR Code on the card will take guests directly into the virtual tour on their phones.



Front



Back

Figure 9 – DL sized card (DRAFT version) will become available for guests at the Adina Hotel Apartments

A Project Highlight

The project has proven to be an **exemplar as a model for collaboration** between UniSA and external stakeholders including the National Trust (South Australia), the South Australian Department of Treasury and Finance and the Adina Hotel Apartments. Each of these groups has contributed to the research, facilitation, quality assurance of the content and in the production of the digital stories.

Financial Report

The majority of the project budget went towards casual salaries for project officer support and for the media creation and direction, production, post-production editing and hosting of the virtual tour through the UniSA ProjectLIVE team.

The University of South Australia

X502dAD Whole of Life Report - CC/M1/M2/lcode

Cost Centre 032828: UNISA T&L DLS GRANT 2020 SHIAO-LAN CHOU

As at Decemeber 2021

	Act 2019 \$	Act 2020 \$	Act YTD 2021 \$	Actual Total to Date \$	Working Budget TOTAL \$	✓ ⇄ ✘
Gross Operating Revenue						
M2060 Internal Research Revenue						
6645 - Inter-Academic Unit Research Support	0	0	(4,082)	(4,082)	0	⇄
Sub Total: Internal Research Revenue	<u>0</u>	<u>0</u>	<u>(4,082)</u>	<u>(4,082)</u>	<u>0</u>	<u>⇄</u>
M2090 Other Revenue						
1895 - PD Funds Transfers	0	0	1,500	1,500	0	⇄
6721 - Non-Research Internal Transfers	0	3,384	16,616	20,000	0	✓
Sub Total: Other Revenue	<u>0</u>	<u>3,384</u>	<u>18,116</u>	<u>21,500</u>	<u>0</u>	<u>✓</u>
Total Gross Operating Revenue	<u>0</u>	<u>3,384</u>	<u>14,034</u>	<u>17,418</u>	<u>0</u>	<u>✓</u>
Operating Expenses						
M2105 Salaries & Related Expenses						
0625 - Casual Salaries - Non Acad	0	2,905	12,046	14,951	0	✓
0806 - Casual Salary O/costs (16.5%) - Non Acad	0	479	1,988	2,467	0	⇄
Sub Total: Salaries & Related Expenses	<u>0</u>	<u>3,384</u>	<u>14,034</u>	<u>17,418</u>	<u>0</u>	<u>✓</u>
Total Operating Expenses	<u>0</u>	<u>3,384</u>	<u>14,034</u>	<u>17,418</u>	<u>0</u>	<u>✓</u>
Operating Result	<u>0</u>	<u>0</u>	<u>(0)</u>	<u>(0)</u>	<u>0</u>	<u>⇄</u>
Corporate Items						
Total Corporate Items	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>⇄</u>
Net Result & Net Margin	<u>-</u>	<u>-</u>	<u>(0)</u>	<u>(0)</u>	<u>-</u>	<u>⇄</u>
Closing Balance	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>⇄</u>
	<u>0</u>	<u>0</u>	<u>(0)</u>	<u>(0)</u>	<u>0</u>	<u>⇄</u>